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ABSTRACT

A report on pharmacy education in Florida and the United States and on Florida labor supply is presented. Overviews of the pharmacy profession and pharmacy education are also given, including the areas of history, careers, licensure, salaries, accreditation, curriculum, enrollment, degrees awarded, and tuition and fees. Information on the colleges of pharmacy at Florida A & M University and the University of Florida is presented, with attention to curricula, enrollment, degrees, educational facilities, minority access and retention, faculty, and research. Recommendations include: enrollment should not be reduced in the two state colleges of pharmacy, since there is a shortage of pharmacists in Florida; the Board of Regents should maintain both the five-year baccalaureate degree and the six-year doctor of pharmacy degree programs; and, at its next program review, the Regents should reassess pharmacy practice needs and state manpower needs to consider whether the five-year baccalaureate degree should be retained as preparation for entry-to-practice. Access for students to pharmacy education in Southeast Florida and minority access to pharmacy education are also addressed. A 1986 pharmacy inventory and questionnaire are appended. (SW)

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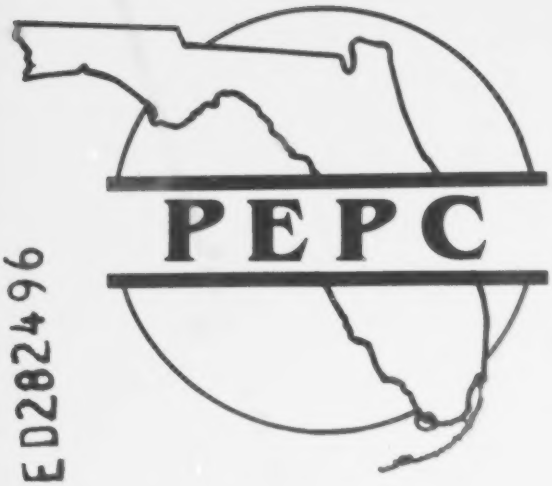

PHARMACY EDUCATION IN FLORIDA

HE 020 323

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Report and Recommendations of the Postsecondary Education Planning Commission

1987 - REPORT 4

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The Postsecondary Education Planning Commission, initially created by executive order in 1980 and subsequently given statutory authority, serves as an advisory body to the State Board of Education on all postsecondary education matters. The Commission is composed of 11 members of the general public and one full-time student registered at a postsecondary education institution in Florida. Members are appointed by the Governor with the approval of three members of the State Board of Education and subject to confirmation by the Senate.

The major responsibility of the Commission is preparing and updating every five years a master plan for postsecondary education. The enabling legislation directed that the Plan "shall include consideration of the promotion of quality, fundamental educational goals, programmatic access, needs for remedial education, regional and state economic development, demographic patterns, student demand for programs, needs of particular subgroups of the population, implementation of innovative educational techniques and technology, and the requirements of the labor market. The capacity of existing programs, in both public and independent institutions, to respond to identified needs shall be evaluated and a plan shall be developed to respond efficiently to unmet needs."

Other responsibilities include recommending to the State Board of Education program contracts with independent institutions; advising the State Board regarding the need for and location of new programs and branch campuses of public postsecondary education institutions; reviewing public postsecondary education budget requests for compliance with the State Master Plan; recommending to the Commissioner of Education proposals for support through the Postsecondary Cooperation Trust Fund; and periodically evaluating the State's 28 regional coordinating councils for vocational education, adult general education and community instructional services.

Further information about the Commission, its publications, meetings and other activities may be obtained from the Commission office, 304 Knott Building, Department of Education, Tallahassee, Florida, 32301; telephone (904) 488-7894.

POSTSECONDARY EDUCATION PLANNING COMMISSION

PHARMACY EDUCATION

IN

FLORIDA

Prepared in Response to

Specific Appropriation 521

of the

1986 General Appropriations Act

(Chapter 86-167, Laws of Florida)

1987 - Report 4

February 19, 1987

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EXECUTIVE SUMMARY

Comprehensive Health Professions Education Plan

At the request of the 1982 Legislature, the Postsecondary Education Planning Commission developed an outline for a comprehensive health professions education plan for the State of Florida. Submitted to the Legislature in March 1983, the outline recommended that the Postsecondary Education Planning Commission undertake a series of reports in the different health professions education areas. Eighth in the series, this report on pharmacy education follows reports on nursing, public health, dentistry, chiropractic, medical education, allied health education, and veterinary education.

In the proviso to Appropriation Item 521, the 1986 Legislature more specifically directed the Postsecondary Education Planning Commission to:

> "continue the development of a comprehensive health professions plan for the State. Priority in 1986-87 shall be given to determining the needs of the State in the areas of pharmacy and veterinary programs. The study should include an analysis of the State's responsibility for providing access to its citizens and the demand in Florida for program graduates using supply and demand information provided by the Department of Health Planning and Development. To maintain the plan up-to-date, the Commission shall also prepare a review of the status of all health professions education programs included in the plan and provide current information on enrollment and graduate levels, a review of market place demand for graduates, and an analysis of new policy issues and the disposition of former recommendations. The Commission shall provide reports to the Legislature on pharmacy and veterinary education no later than March 1, 1987 and the review of all health education plans no later than March 1, 1988."

In January 1986, the Florida Board of Regents, at the culmination of a year-long pharmacy program review, made the following recommendation:

> Maintain the B.S. in Pharmacy and the Pharm.D. entry-level degrees at UF and FAMU until the results of the PEPC study based on current supply/demand information in the Pharmacy profession are known. The PEPC study is scheduled for completion March 1, 1987. At the July 1987 meeting of the Board of Regents Program Committee, the Colleges of Pharmacy at UF and FAMU will submit plans to phase out the B.S. in Pharmacy entry level degree and implement the Pharm. D. as the sole entry level degree.

Commission Activities

The Chairman of the Postsecondary Education Planning Commission appointed a Committee of three Commission members to serve as the Comprehensive Health Professions Education Committee.

The Committee held meetings in July, October, December and January to receive public testimony and discuss issues and recommendations. Testimony has been received from the two public colleges of pharmacy and the new, private college of pharmacy, representatives of the pharmacy industry, the Board of Regents, the Florida Board of Pharmacy, the Florida Society of Hospital Pharmacists, and the American Council on Pharmaceutical Education. Additionally, the Committee reviewed national pharmacy manpower studies and incorporated the findings of the 1986 Pharmacy Inventory conducted by the Office of Comprehensive Health Planning of the Florida Department of Health and Rehabilitative Services.

Pharmacy Programs in Florida

In the State of Florida, there are two public colleges of pharmacy, at Florida A & M University and at the University of Florida. Additionally, there is one private college of pharmacy at the Southeastern College of Osteopathic Medicine that will open in the Fall of 1987.

Pharmacy Manpower

The Commission reviewed national, regional and State manpower reports and received testimony from retail and hospital representatives that there is a shortage of pharmacists in the State. The new college at SECOM, however, will eventually increase the Florida graduate supply by approximately 70 percent. The Commission finds it important that the State not allow any reduction in enrollment levels and urges the State colleges to maintain their current enrollment.

1. Enrollment should not be reduced in the two State colleges of pharmacy.

Degree Options for Entry to Pharmacy Practice

The Commission has received testimony on the increasing complexity of the pharmacy profession, the development of patient-oriented pharmaceutical services, and the expansion of clinical roles of pharmacists in the total delivery of health care. In response to these trends, there has been a gradual increase, nationally, in six-year doctor of pharmacy training programs.

Testimony received by the Commission, however, failed to provide justification for the elimination of the five-year baccalaureate training program. Industry representatives have testified that there is a clear need for a general pharmacy practitioner in the community setting. In the industry, there is no differentiation for the two entry-level degrees and there continues to be demand for baccalaureate graduates, particularly in light of the shortage of pharmacists. The Commission recommends that the Board of Regents maintain both the baccalaureate and doctor of pharmacy degree programs in the State colleges of pharmacy and, during its next pharmacy program review, reassess

pharmacy practice needs and State manpower needs in relation to entry-to-practice degree programs.

The Commission also recommends that a state-level Task Force on Pharmacy Education be established so that involved parties can come together to address pharmacy education issues in the State.

2. The Board of Regents should maintain both the five-year baccalaureate and the six-year doctor of pharmacy degree programs in the State colleges of pharmacy.

3. During its next pharmacy program review, the Board of Regents should reassess pharmacy practice needs and State manpower needs in order to consider if the State colleges of pharmacy should continue to offer the five-year baccalaureate degree as preparation for entry-to-practice.

4. Prior to the next BOR pharmacy program review, the Office of the Vice Chancellor for Health Affairs should convene a Task Force on Pharmacy Education in Florida and invite representatives of the public and private colleges of pharmacy, the Postsecondary Education Planning Commission, the Florida independent, chain and hospital pharmacy industries, and the Board of Pharmacy to address pharmacy education issues as they relate to professional pharmacy practice and manpower needs in Florida. Included in the Task Force deliberations should be a cost analysis of the professional degree programs, including a comparison of the costs of offering both degree tracks versus the Pharm.D. only curriculum.

Access for Students to Pharmacy Education in Southeast Florida

The two public colleges of pharmacy are located in the northern section of the State at considerable distance from the more densely populated areas of southern Florida.

The Commission supports the initiatives of Florida A & M University, who along with the University of Florida, are increasingly providing pharmacy training opportunities for the residents of this region of the State. The new Southeastern College of Pharmaceutical Sciences will provide additional geographic access to residents in the southeastern part of the State.

5. Given Florida A & M University's traditional mission of serving low-income students and its current presence in Miami, the Board of Regents should consider expanding the University's presence, in cooperation with the University of Florida, to provide residents the opportunity to pursue the professional pharmacy degree acquiring the majority of their instruction without leaving the Miami area.

6. Because pharmacy has proven to be an excellent preparation for medical school and because of the extreme shortage of minority physicians in Florida, the University of Miami and Florida A & M University are encouraged to develop further the pharmacy-to-M.D. curriculum.

Minority Access to Pharmacy Education

The two public colleges of pharmacy have committed staff, facilities and funding to develop strategies to recruit and retain minority students in pharmacy education. The Commission recognizes the presence of Florida A & M University College of Pharmacy in our State, one of the few historically black colleges of pharmacy. This College has made a significant impact both nationally and regionally, in producing minority pharmacists. Additionally, the minority enrollment of the University of Florida College has consistently exceeded the national average for colleges of pharmacy.

7. The CHOICES system maintained by the Center for Career Development Services should continue to include information about pharmacy education opportunities in Florida and the availability of financial aid and job opportunities for minorities who desire to enter pharmacy.

8. Activities undertaken by the colleges of pharmacy to reach out to minority and disadvantaged high school and community college students should include information on financial aid and on career opportunities available in pharmacy.

In conclusion, the citizens of the State of Florida are being well-served in regards to access to and quality of pharmacy education in the State through the two public colleges of pharmacy at Florida A & M University and at the University of Florida. Additionally, the new Southeastern College of Pharmaceutical Sciences will eventually increase pharmacy manpower in Florida as well as provide geographic access to residents in the southeastern part of the State.

I. INTRODUCTION

Comprehensive Health Professions Education Plan

At the request of the 1982 Legislature, the Postsecondary Education Planning Commission developed an outline for a comprehensive health professions education plan for the State of Florida. Submitted to the Legislature in March 1983, the outline recommended that the Postsecondary Education Planning Commission undertake a series of reports in the different health professions education areas. Eighth in the series, this report on pharmacy education follows reports on nursing, public health, dentistry, chiropractic, medical education, allied health education, and veterinary education.

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II. THE PHARMACY PROFESSION

A. Introduction

Pharmacists dispense drugs and medicines prescribed by physicians, dentists, and podiatrists. In addition to providing information about drugs and drug treatments, pharmacists must understand the use, composition, and effect of drugs and how they are tested for purity and strength. They maintain patient medication profiles and advise physicians of the proper selection and use of medicines.

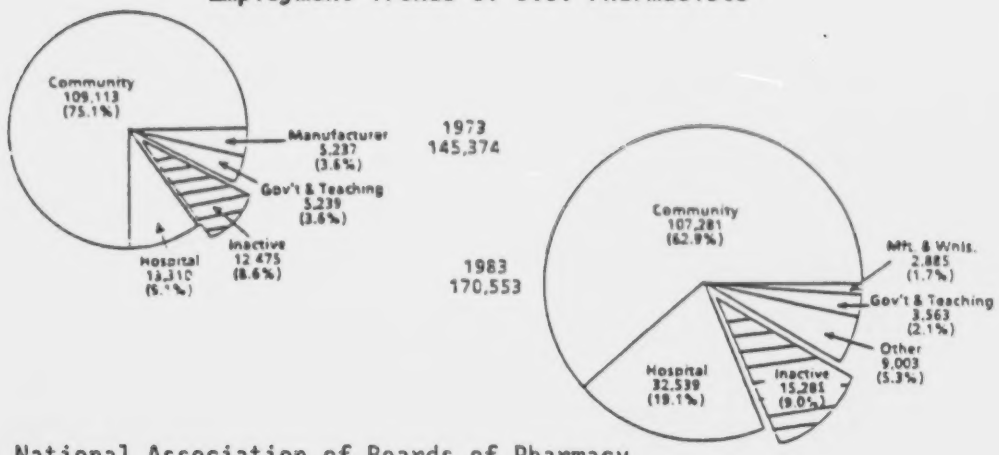
Traditionally, the pharmacist has been thought of as a compounder and dispenser of medications. As twentieth century technology has continued to advance, the pharmacist has taken on new roles and responsibilities. The profession has had to respond to the ever-increasing numbers of new drug products that have appeared on the market and the greater need for patient information about these drugs. Increased emphasis has been on the direct patient-practitioner relationship, and the profession has broadened to emphasize an active role in promoting the proper use and preventing the abuse of drugs. Patients have become more aggressive in their quest for information about the medications and drug regimens prescribed for them.

The broader, patient-oriented roles of the pharmacist include patient counseling, drug therapy follow-up, pharmacokinetic consultation, providing drug information to other health professionals, and prescribing. In addition to dispensing prescription medication, an increasing activity for pharmacists has been their preventive health role in counseling patients about self-care and the informal use of nonprescription drugs and medication. Other tasks and functions include education, research, drug production and analysis, and administration and supervision.

In 1983, nearly two thirds of all active pharmacists were employed in community pharmacies, a significant decrease from 1973 when seventy-five percent of pharmacists were employed in community pharmacies. See Figure 1. Additionally, pharmacy has moved from a profession largely characterized by practitioners who owned pharmacies to one whose members are often employees. The proportion of pharmacists working in independently owned pharmacies has decreased significantly in the last two decades while the proportion of pharmacists working in chain store pharmacies has more than doubled. More than one-third of all active pharmacists were employed in hospitals, nursing homes, government agencies, educational institutions, or manufacturing industries in 1983. Figure 1 shows that, in the last decade, employment of pharmacists in hospitals has more than doubled.

FIGURE 1

Employment Trends of U.S. Pharmacists



Source: National Association of Boards of Pharmacy

B. History

The origin of pharmacy is traceable to primitive civilizations when witch doctors were perceived as the source of help for mankind's problems. As civilizations progressed, witch doctors gave way to various "specialists", and physicians became the source of healing. Mysticism and sorcery continued to prevail and pharmacy and medicine remained intertwined for centuries. The earliest records of medical and pharmaceutical practices appear in Egypt about 3600 B.C. where serpents were commonly used in healing rituals. Various mixtures of animal and plant parts were eventually incorporated in preparing prescriptions for the healing process.

In the fourth century, the Greek physician Hippocrates, the Father of Medicine, introduced the scientific method to the art of healing. However, for hundreds of years following his contributions, little changed in the pharmaceutical field until Arabians introduced the first apothecaries. This is considered a significant event in the evolution of pharmacy, as it was the first time pharmacy was identified as a profession apart from medicine. Concurrently, in other parts of Europe, the Church and its monasteries preserved the art and science of pharmacy. Finally, in the 13th Century, under the edict of a German emperor, pharmacy in Europe was recognized officially as a profession separate from medicine, a division essential for the development of the pharmaceutical profession.

In the Renaissance period of the 16th Century, pharmacy witnessed a major philosophical change as it began to be viewed as a profession with a chemical orientation in medicinal substances rather than botany-based. The growth of pharmacy as a profession was also heightened by the increased attention on medicine and the healing arts caused by a series of epidemics, greater

accessibility to medical texts due to printing advances, and the establishment of specific guilds for pharmacists.

The development of American pharmacy was influenced primarily by English pharmacy, which was much slower in evolving as a profession separate from medicine than its European counterparts. As a result, early settlers in the New World borrowed heavily from the Indians for remedies. During the first 200 years of colonization, medicine and pharmacy were practiced by housewives, barbers, governors, the clergy, and educators, in addition to a few trained apothecaries, surgeons, and physicians. Self-medication was the primary method of combatting disease in most areas. The great influx of English "patent medicines" into the colonies during the 18th Century provided less expensive ways of treating diseases, especially with the shortage of qualified physicians and apothecaries. As a result, trained American pharmacists confronted vigorous competition from a wide variety of people: from professional physicians to ordinary commercial storekeepers and peddlers.

Contrary to the early European success in separating pharmacy and medicine, the separation did not occur in the United States until the 18th Century. The Revolutionary War, with the appointment of an Apothecary-General, caused pharmacy to be recognized officially as a separate and distinct profession. Interestingly, physicians in Philadelphia in the early 1800s strongly advocated professional stature for pharmacists. The gradual evolvement of professional pharmacy was promoted through local associations and colleges of pharmacy. The American Pharmaceutical Association was organized in 1852 as a result of drug adulteration and substitution. Additionally, by 1860 six colleges of pharmacy were established, giving impetus to formal education for pharmacists.

Other major forces shaping the American pharmaceutical profession included 19th Century industrialization which brought mechanization through drug mills and tablet machines developed in the United States and England. During the 20th Century, World War I was the starting point for phenomenal growth of the pharmaceutical industry in the United States as America was forced to independently research and synthesize its own drug products when the war interfered with shipments of drugs from Germany.

Marked changes in the U.S. pharmacy profession have occurred during the last 50 years. Technological developments, changing societal perceptions of the role of the pharmacist, economic forces, and legal regulatory changes have all contributed to the rapid evolution of the pharmacy professional and the rapid growth of the profession. In particular, increased emphasis on clinical pharmacy has affected educational curricula and employment, and has altered public expectations of the pharmacist as a significant member of the health-care team.

C. Careers

The pharmacy profession offers diverse employment opportunities for graduates with either the B.S. or Pharm.D. entry level degree. Growth in the profession, especially within the last 100 years, has resulted in specialization. The rise of clinical practice has dramatically changed the

role of the pharmacist, and pharmacists now hold positions in community, professional, and hospital pharmacies as well as industry, academe, government, and other areas. Table 1 illustrates the employment patterns of licensed pharmacists in 1983 as compared to 1973.

TABLE 1

Distribution of Pharmacists by Principal Employment Setting 1973 and 1983

Employment Setting	National Percent Distribution 1973	1983
Community (Chains and Independents)	75.1	62.9
Hospital	9.1	19.1
Manufacturing	3.6	1.7
Government and Teaching	3.6	2.1
Other	---	5.3
Inactive	8.6	9.0

Source: National Association of Boards of Pharmacy

In 1983, approximately 19 per cent of practicing pharmacists worked in hospitals, where they primarily dispensed inpatient and outpatient prescription medications. In addition to the traditional role of supervising the distribution of drugs, hospital pharmacists are often involved with educating patients on drug therapy and providing pharmacokinetic and therapeutic consultations to physicians. They also help conduct in-service education programs for other health professionals.

Community pharmacies are often the entry point for recent graduates who may later move into managerial positions with chain drug stores, or establish an independent pharmacy. The majority of practicing pharmacists, 63 percent in 1983, were employed in drug stores, community, and medical building pharmacies. The community pharmacist provides a variety of health services to patients and consultation to other health professionals. In addition, some buy and sell nonhealth-related merchandise, hire and supervise personnel, and oversee the general operation of the pharmacy.

Slightly over one percent of pharmacists are in academe in research, teaching, and administration. Academic qualifications for teaching usually require a master of science and/or a doctor of philosophy degree in a discipline beyond the Pharm.D. degree.

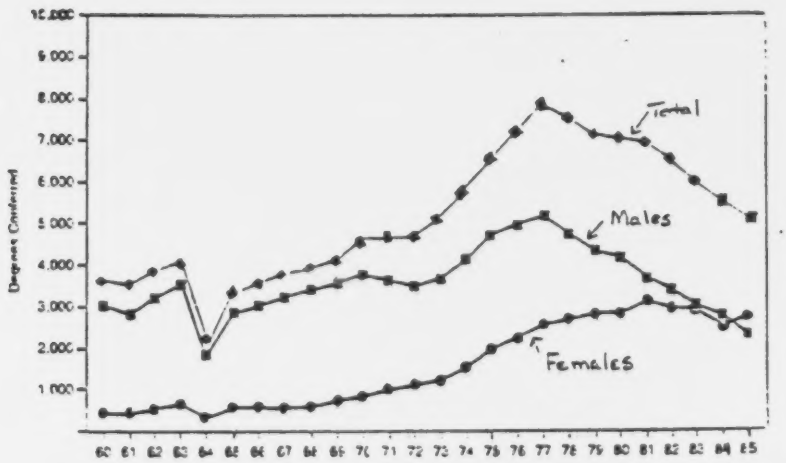
Pharmacists in manufacturing accounted for about two percent of licensed pharmacists in 1983. They are involved in advertising, research, product development, and quality control, often working with regulatory affairs.

Graduates in pharmacy also serve as medical service representatives, calling on physicians, dentists, veterinarians, and other pharmacists.
Pharmacists occupy a variety of positions in federal, state, and local governments. Among the possible locations are public health departments, the Food and Drug Administration, U.S. Public Health Service, National Institute of Health, the armed forces, and licensing agencies. Over one percent of licensed pharmacists are involved in government practice.

Pharmacy as a professional career has become increasingly attractive to women in recent years. Enrollment and graduation rates have risen to the point that in the 1984-85 academic year women earned 54 percent of the entry-level degrees conferred, including both the B.S. degree and Pharm.D. as first professional degree, as compared to 1965 when women earned 14 percent of all pharmacy degrees. Figure 2 illustrates the yearly number of B.S. and Pharm.D. degrees conferred to females and males from 1960 to 1985. While females have steadily earned more pharmacy degrees since 1967, the number of degrees awarded to males peaked in 1977 and has declined continuously in the last ten years.

FIGURE 2

Total Pharmacy Degrees Conferred by Sex
1960 - 1985



Source: Pharmacy Times, June, 1986.

This interest in pharmacy may be a reflection of the occupation's flexible hours and availability of part-time employment. Table 2 indicates the growing

percentage of female graduates electing hospital employment as well as graduate work.

TABLE 2

Career Choices By Sex
1984 and 1985

CAREER FIELDS	MEN		WOMEN		ALL	
	1985	1984	1985	1984	1985	1984
Community pharmacy	60.6	57.4	51.6	53.0	55.9	55.1
Hospital pharmacy	22.1	23.9	29.2	28.1	25.9	26.1
Manufacturing	3.0	3.1	3.7	4.2	3.4	3.7
Government	1.1	1.2	0.8	1.0	0.9	1.1
Other career fields	2.1	2.9	1.9	3.0	2.0	3.0
Graduate work	7.1	7.6	8.1	6.9	7.6	7.2
Undecided	4.0	3.9	4.7	3.8	4.3	3.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: American Druggist, August, 1985.

D. Licensure

Table 3 shows the number of licensed pharmacies in the U.S. as of December 1985. The data reveal that Florida ranks fourth in the country, behind California, Texas and New York in total pharmacies and hospital pharmacies, and third in the country in community pharmacies.

TABLE 3

1985 NABP CENSUS OF PHARMACY—PHARMACISTS/PHARMACIES

PHARMACIES—NUMBER OF PHARMACIES LICENSED AS OF DECEMBER 31, 1985

State	Total Pharmacies	Hospital Pharmacies*	Community Pharmacies*	Chain (Four or More)	Dealers Licensed to Sell OTC Drugs
Alabama	1,382	207	810	365	160
Alaska	118	12	85	21	
Arizona	687	64	262	361	3,427
Arkansas	838	114	712	12	17
California	5,528	620	4,568	340	442
Colorado	708	59	427	222	
Connecticut	701	27	515	159	
Delaware	126	15	43	68	89
Dist. of Columbia					
Florida	3,288	324	2,964		11
Georgia	2,203	228	1,875		141
Hawaii	140	15	125	0	
Idaho	315	41	49	225	2
Illinois	3,171	251	94	2,030	
Indiana	1,488	183	615	690	299
Iowa	865	44	821		
Kansas	815	159	438	218	2,132
Kentucky	1,167	123	783	261	
Louisiana	1,442	182	857	403	0
Maine	249	27	123	126	123
Maryland	1,009	55	375	357	
Massachusetts	1,365	190	778	397	0
Michigan	2,411	265	2,146		581
Minnesota	1,205	174	793	238	N/A
Mississippi	979	144	647	188	0
Missouri	1,373	154	932	287	
Montana	316	35	281		
Nebraska	625	104	424	97	
Nevada	209	20	181	8	229
New Hampshire	254	49	128	77	0
New Jersey	1,756	193	1,563		
New Mexico	350	59	177	114	12
New York	4,722	201	4,521	N/A	379
North Carolina	1,861	169	839	853	
North Dakota	244	51	176	17	98
Ohio	2,613	251	1,209	1,153	0
Oklahoma	1,262	139	1,123		62
Oregon	720	104	485	131	3,110
Pennsylvania	3,097	354	2,743		
Rhode Island	239	27	212	84	0
South Carolina	981	73	2	906	384
South Dakota	292	57	210	25	2,051
Tennessee	1,620	245	930	445	0
Texas	4,866	542	2,608	1,716	0
Utah	433	29	250	154	
Vermont	138	2		136	
Virginia	1,368	116	602	650	119
Washington	1,131	127	716	288	3,674
West Virginia	524	63	277	184	20
Wisconsin	1,206	132	1,074		
Wyoming	135	8	104	23	0
TOTALS	64,435	6,827	42,675	14,029	7,551

*Estimates based on national mean.

A license to practice pharmacy is required in all states, the District of Columbia, and Puerto Rico. To obtain a license, one must graduate from an accredited pharmacy program (a few states allow graduation from foreign pharmacy programs), pass a state board examination, and have a specified amount of practical experience or serve an internship of at least 1500 hours under the supervision of a licensed pharmacist.

The National Association of Boards of Pharmacy's standardized NABPLEX exam is given by almost all states, including Florida, where it has been administered by the Department of Professional Regulation in January and June of each year. Since 1986, the test has also been offered in September. The examination is composed of two sections: the theoretical portion that is frequently given immediately after graduation and the practical examination that is taken after completion of the internship. Table 4 shows the total number of licensed pharmacists in the U.S. as of December 1985. The data reveal that Florida is seventh in the country in the total number of licensed pharmacists, and Florida leads the country in the number of licensed pharmacists not in practice in the State.

TABLE 4

1985 NABP CENSUS OF PHARMACY—PHARMACIST/PHARMACIES

PHARMACISTS—TOTAL NUMBER LICENSED, WHERE THEY PRACTICE

State	Total Licensed By State	In Practice: Total Practice In State	In Practice: Total In Community Practice In State *	In Practice: Hospital Pharmacy *	In Practice: Manufacturing/ Wholesale *	In Practice: Teaching * Government	In Practice: Other * Capacities	Not In Practice In State
Alabama	4,244	2,928	2,088	664	9	44	123	147
Alaska	330	260	178	52	4	7	19	0
Arizona	4,127	1,947	1,388	375	34	150	297	394
Arkansas	2,589	1,826	1,457	285	26	51	7	118
California	18,139	15,624	10,718	3,125	234	421	1126	0
Colorado	3,509	3,104	2,094	753	52	96	109	405
Connecticut	3,785	2,370	616	569	0	0	1,185	540
Delaware	811	375	257	75	6	10	27	56
Dist. of Columbia	1,268	776	532	155	11	21	57	88
Florida	12,923	7,135	4,895	1,427	107	193	513	2,719
Georgia	7,133	4,976	3,413	995	75	134	359	0
Hawaii	723	397	272	79	6	11	29	53
Idaho	1,296	773	629	129	7	12	0	0
Illinois	12,182	9,077	6,227	1,815	136	245	654	0
Indiana	6,412	4,507	3,092	901	68	122	324	0
Iowa	3,483	1,873	1,395	301	8	37	132	314
Kansas	3,006	1,837	1,264	493	14	42	24	129
Kentucky	3,550	2,555	1,753	511	38	69	184	0
Louisiana	4,707	3,225	2,177	888	73	80	7	431
Maine	976	645	475	136	15	10	9	0
Maryland	4,866	3,419	2,345	684	51	92	247	0
Massachusetts	7,062	5,000	4,300	780	100	100	20	1,062
Michigan	7,963	4,877	3,345	975	73	132	352	557
Minnesota	4,221	3,085	1,918	717	150	150	150	0
Mississippi	2,880	1,964	1,663	256	2	31	12	66
Missouri	5,163	3,270	2,018	926	90	1	235	260
Montana	1,088	666	457	133	10	18	48	5
Nebraska	2,614	1,721	1,100	300	75	75	50	—
Nevada	4,320	623	471	132	5	9	6	5
New Hampshire	1,090	573	409	117	0	18	29	59
New Jersey	7,197	5,426	3,722	1,085	81	146	392	503
New Mexico	1,426	774	527	206	13	17	11	30
New York	16,701	13,739	9,425	2,747	206	371	990	0
North Carolina	5,145	3,928	2,786	772	38	32	190	316
North Dakota	1,941	684	535	105	3	34	7	94
Ohio	9,837	7,675	3,009	1,909	186	223	186	462
Oklahoma	3,914	2,397	1,644	479	36	65	173	274
Oregon	2,821	1,631	1,325	233	5	31	37	356
Pennsylvania	14,158	10,065	6,904	2,013	151	272	725	0
Rhode Island	1,655	838	536	238	22	28	14	148
South Carolina	3,507	2,263	1,653	470	43	74	23	311
South Dakota	1,086	595	370	147	5	25	48	35
Tennessee	5,348	3,445	2,361	0	0	150	934	341
Texas	14,553	11,750	7,570	2,494	204	293	1189	203
Utah	1,949	1,150	789	230	17	17	83	0
Vermont	1,292	380	261	76	6	10	27	912
Virginia	5,247	3,572	2,426	764	41	24	317	535
Washington	4,953	3,397	2,330	679	51	92	245	0
West Virginia	2,267	1,130	814	265	1	13	37	143
Wisconsin	4,896	2,998	2,056	600	45	81	216	342
Wyoming	1,010	346	252	68	0	21	5	56
TOTALS	246,918	167,799	114,241	34,328	2,633	4,414	12,183	12,469

*Estimates based on national mean.

The Department of Professional Regulation reports that 654 candidates (85 percent) passed the licensure examination in Florida in 1986. See Table 5. The percent of Florida pharmacy graduates taking the examination was approximately 21 percent in 1982, 26 percent in 1983, and 24 percent in 1984; the percentages for 1985 and 1986 fell to 18 percent and 19 percent respectively. This means that for the last five-year period, from 74 to 82 percent of all persons taking the examination were not students from the two in-state universities with colleges of pharmacy, University of Florida or Florida A & M University.

Additionally, the Department of Professional Regulation reports that, during the period of 1981-86, 97 percent of the graduates of the University of Florida College of Pharmacy who took the licensure examination in Florida passed, while 58 percent of the graduates of Florida A & M University College of Pharmacy who took the examination passed.

TABLE 5

Licensure Examination Pass Rates for Graduates of the University of Florida and Florida A & M University Colleges of Pharmacy and other Examinees June 1981 to June 1985

Date	UF			FAMU			OUT-OF-STATE SCHOOLS			ALL		
	# Pass	# Fail	% Pass	# Pass	# Fail	% Pass	# Pass	# Fail	% Pass	# Pass	# Fail	% Pass
June, '81	99	1	99	21	8	72	183	56	77	303	65	82
Jan. '82	21	0	100	25	4	86	257	45	85	303	49	86
June, '82	86	2	98	10	13	43	230	70	77	326	85	79
Jan. '83	35	0	100	15	25	38	208	51	80	258	76	77
June '83	77	4	95	4	27	13	224	52	70	305	83	79
Jan. '84	13	2	87	31	29	52	222	82	73	266	113	70
June '84	86	2	98	22	13	63	256	50	84	364	65	85
Jan. '85	12	0	100	26	6	81	264	40	87	302	46	87
June '85	84	0	100	4	6	40	306	39	89	394	45	90
1986	87	6	94	40	14	74	527	94	85	654	114	85
Totals 1981-86	600	17	97	198	145	58	2,677	579	82	3,475	741	82

Source: Department of Professional Regulation, 1986.

A prospective Florida examinee must be at least 18 years of age, hold a degree from an accredited school or college, and have completed an internship program approved by the board. Foreign applicants must be graduates of a four-year undergraduate pharmacy program outside of the United States, have demonstrated proficiency in English by passing the Test of English as a Foreign Language (TOEFL), have passed the Foreign Pharmacy Graduate Equivalency Exam, and have completed a minimum of 500 hours in a supervised work activity program in Florida under the supervision of a Florida licensed pharmacist.

E. Salaries

As with many health professions, salaries of pharmacists are influenced by the location, size, and type of employer, as well as the duties and responsibilities of the position. Additionally, those who do consulting work in addition to their primary job may have total earnings that are considerably higher than their non-consulting colleagues' salaries.

Table 6, which compares the average salaries of pharmacists in the primary employment areas, shows that average salaries for chains, hospitals, and academe are somewhat similar while independent and government average

TABLE 6

Average Salaries by Employment Area
1984

Employment Area	New Graduates Average Starting Salary	Overall Average Salary
Chains	N/A	35,845
Hospitals	N/A	35,166
Independents	N/A	30,209
Faculty Member	29,391[a]	39,725[b]
Federal Government	21,800	29,200

[a] Instructor, calendar year basis.

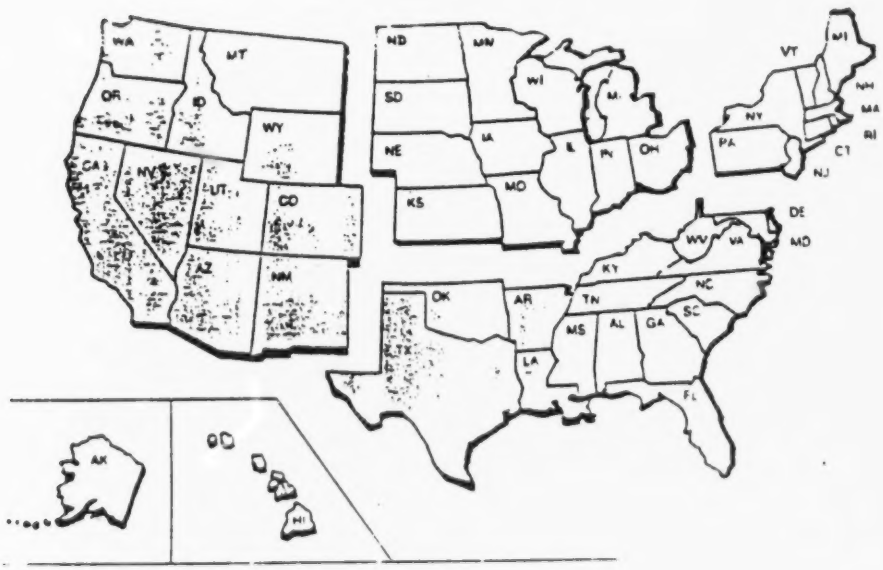
[b] Average of all academic ranks, calendar year basis.

Sources: Drug Topics, April to May, 1985 and
Occupational Outlook Handbook, 1985, and AACP.

salaries fall below others. Figure 3 details the regional average salary levels for pharmacists employed in chains, as independents, or in hospitals. These three employment areas account for approximately 82 percent of all pharmacists. The Southern regional average salaries rank second from the highest after the Western region. As with national averages, regional salaries in chains and hospitals are over $4,000 higher than those for independents.

FIGURE 3

Base Salary by Region for Chain, Independent, and Hospital Employment 1984



Employment Area	Regional Average Salary				National Average Salary
	West	Midwest	South	East	
Chain	$39,292	$34,401	$34,764	$34,922	$35,845
Independent	31,468	30,044	30,557	28,766	30,209
Hospital	38,056	34,243	34,818	33,548	35,166

Source: Drug Topics, April to May, 1985.

F. Trends

Prior to the 1970s the work of the pharmacist centered on drug entity and dosage form while patient concerns were left to the physician. In the last fifteen years, however, a shift in the ideological and practical basis of pharmacy practice has occurred. Pharmacists operating from a "clinical pharmacy" perspective, now focus more on the patient and drug therapy as the basis of practice. Pharmacy education curricula, government mandates and revised accreditation standards reflect this clinical emphasis. Current trends and issues that have arisen as a result of scientific and technological developments, economic and social impacts, clinical developments, legal and regulatory changes, and demographic shifts, will guide the direction of the pharmacy profession into the next century.

A major trend is in the demographics of age groups. The shifting age structure of the American population will continue to affect health-related services and health professions training through the mid-1990's. The number of people age 35 to 54 will increase and a sharp rise in the number of people 65 and older is also expected. The growing number of elderly Americans will result in both increased need and demand for pharmaceutical services. Elderly patients currently consume about 25 percent of all medications; by the year 2000 this will rise to more than 30 percent. Pharmacists must be alert to the unique psychological, social, and physiological characteristics of the elderly cohort. Since multiple acute and chronic medical conditions are common among the elderly, thorough medical evaluation often requires the services of several different kinds of health care providers, who tend to prescribe their own regimen. Coordination and oversight are particularly needed for the elderly.

In addition to shifts in population characteristics, a movement of U.S. population is predicted toward the South and West. By the year 2000, a 31 percent increase is expected in the South.

Three trends have been evident in pharmacy school enrollment in recent years. First year enrollment appears to have stabilized after a ten-year period of decline, with a slight total enrollment increase between 1985-86 and 1984-85. Shifts have also been occurring in program enrollments, as the Pharm.D. entry level program has attracted more students. Recent decreases in B.S. and Pharm.D. - Post B.S. enrollments have been somewhat offset by Pharm.D. entry-level increased enrollments in the last three years.

As a result of the increasing enrollments in the Pharm.D. degree and the decrease in the B.S. enrollments, there is growing interest among baccalaureate-trained pharmacists in utilizing external degree programs to supplement their professional preparation. Concern among B.S. graduates about professional advancement include restrictions on monitoring drug utilization, job opportunities, and participation in professional meetings. The only external Pharm.D. program currently offered is at Purdue University's Pharmacy School which has produced only 12 graduates. New programs will be available soon through the University of Illinois at Chicago, the University of Kentucky, and among some members of a 22-school consortium for curriculum resource development. A recent survey sponsored by a pharmacy journal revealed high interest among respondent B.S. holders in external degree

programs. The University of Florida College of Pharmacy and Florida A & M University have submitted a "Request to Plan an External Pharm.D. Program" to the Board of Regents. As the two-tiered pharmacy education system increasingly moves to one degree offering and employment areas become more selective toward the Pharm.D. degree, demand for the external degree option will increase.

A third significant enrollment trend is the participation of women and minorities. The steadily increasing presence of women in pharmacy during the last twenty years is evidenced by enrollments that have grown by over 200 percent since 1975-76, with much of this growth occurring in the entry-level Pharm.D. program. Concurrently, graduation rates for women have risen. There is speculation, however, that this trend in increasing participation will level off. General minority and foreign enrollment has decreased slightly; however, the subgroups of blacks and Hispanics have experienced increased enrollments. Considering the national trend toward stabilized enrollments, it is not expected that the number of minorities enrolled in pharmacy schools and colleges will increase significantly in the near future.

A third general trend is in the preferred employment areas of graduates. The current movement away from employment in independent pharmacies is expected to continue through the end of the century. Some futurists predict three main practice sites in the 21st century: hospitals, "extended care" facilities for inpatients, and "medical supermarkets" offering an array of health-care services for ambulatory patients.

There is a growing national trend toward the switching of drugs from legend to over-the-counter status. This change enhances the evolving role of the patient-oriented pharmacists and the social mandate that views the pharmacist as a consultant providing instructions on use, storage, safety, indications, and contraindications. A parallel trend relates to the educational make-up of the profession. Some practitioners and academicians predict an increasing demand for Pharm.D. graduates in the future particularly to work with the growing complexity and highly technical nature of drug administration.

The economic forces that have affected the delivery of all health care will continue to be felt by the pharmacy profession. Cost-conscious strategies will continue to impact the profession in significant ways. At the same time, the profession will continue to be influenced by increasing health expectations as well as shifts in individual perceptions of health and illness, including wellness programs, self care, health education, health promotion, and disease prevention. The creation of preferred health-care providers as a result of negotiated contracts between providers and payers is a reflection of the diverse competitive approaches developing to control rising health care costs. The availability of over-the-counter drugs is another example of cost containment practices.

III. PHARMACY MANPOWER

A. National Outlook

Health manpower forecasts for the next two decades have consistently projected more health care personnel than will be required to meet the job or patient demand. Most studies agree that government subsidy programs started in the 1970s, combined with the declining birth rate and current age structure of the population produced an excess number of professionally trained health personnel.

In the last thirty years, the supply of pharmacists has paralleled the growth of the U.S. population. In its 1986 report On The Status of Health Personnel In The United States, the U.S. Department of Health and Human Services reports that there were an estimated 157,000 active pharmacists in the United States in 1984, an increase of 38 percent since 1970 and 69 percent since 1960.

In 1984, nearly two-thirds of all active pharmacists worked in community pharmacies; approximately one-third in independent establishments and one-third chain store pharmacies. The number of pharmacists working in hospitals doubled in the past 11 years, from 17,000 in 1973 to an estimated 39,000 in 1984.

There has been a dramatic increase in the number and proportion of female pharmacists. In 1950 only four percent of active pharmacists were female; by 1984 the proportion had risen to nearly 24 percent. Estimates indicate that by the year 2000, over 40 percent of all pharmacists will be female. Recent studies have shown that female professionals, over the span of their professional careers, work about 75 percent of the equivalent time of their male counterparts. If this trend holds true, by 1990, one-third of all pharmacists will be working 75 percent equivalent time, resulting in a work force that is only 90 percent available. There has been a corresponding increase in female enrollments in colleges of pharmacy; from 13 percent in 1963-64 to 54.5 percent in 1984-85.

In 1984, it was estimated that the 14,600 minority pharmacists comprised 9.3 percent of the total active pharmacists. This total included 4,100 blacks; 2,900 Hispanics; 7,000 Japanese, Chinese, and other Asians; 300 American Indians; and 300 members of other minority groups.

Since 1977, the number of pharmacy graduates who might be expected to enter practice has declined from a peak of 8,200 to 6,294 in 1984, a decline of 23.2 percent. The task of accurately projecting the future supply of pharmacy graduates, however, is complicated by the following factors:

(1) the percentage of active pharmacists who work part-time;

(2) the declining level of financial support provided by federal, state and local governments for pharmacy education;

(3) the continuing decline of college enrollment rates among 18-22 year olds;

(4) the increasing trend of requiring a minimum of six years of training to obtain the first professional degree; and

(5) the increasing emphasis on clinical training and clinical preparation.

Health planners have recognized that pharmacy manpower in the next twenty years will be influenced by sex distribution, the practice setting and its effect on professional roles, and degree requirements. As reported, the dramatic increase in numbers of female pharmacists is expected to continue as evidenced by the steady rise in female enrollments in U.S. colleges of pharmacy.

The major trend in practice setting has been the movement of pharmacists from the independent privately owned pharmacy to the chain or hospital pharmacy. Health maintenance organizations (HMOs) and other alternative delivery systems are employing pharmacists, and pharmacy is increasingly becoming a profession of employees of large organizations. The move to large health care organizations has accelerated the growth of areas of specialization for pharmacists as well as the overall professionalization of pharmacy. Degree requirements for entry-level practitioners have become the subject of increasing debate among educators, professionals, and policymakers.

According to the U.S. Health and Human Services Report (H.H.S.), the 1984 regional distribution of pharmacists ranged from a high estimate of 77 pharmacists per 100,000 population in the Midwest to a low of 53 in the West, while the South had 67 and the Northeast 65. Florida has a ratio of 45. See Table 7.

Variations in pharmacist-to-population ratios are caused by a variety of factors, including the aging of the population; the type and level of pharmacy services provided; the nature of third party payment systems; the percentage of the population living in rural areas; pharmaceutical advancements; changes in the regulation and practice of pharmacy; the conditions of demand for pharmacy services; the proportion of pharmacists' time devoted to those elements of practice that clearly demand professional training and skills; the utilization of pharmacy assistant or other support personnel; the construction of new medical and nursing home facilities; and the state of the economy.

TABLE 7

Number of Active Pharmacists and Pharmacist-to-Population Ratios, By Region, Division, and State: December 31, 1970, 1980, and 1984

Geographic area	1970		1980		1984	
	Active pharmacists	Active pharmacists per 100,000 resident population	Active pharmacists	Active pharmacists per 100,000 resident population	Active pharmacists	Active pharmacists per 100,000 resident population
UNITED STATES 1/	111,570	55.4	142,780	62.5	156,960	64.0
NORTHEAST	29,524	60.1	33,781	66.5	32,257	64.6
New England	7,697	64.8	9,166	73.9	10,267	81.2
Connecticut	1,998	65.7	2,385	73.1	3,291	72.3
Maine	438	43.9	669	59.2	763	65.7
Massachusetts	4,149	72.8	4,648	86.7	5,483	94.1
New Hampshire	358	48.2	533	57.6	575	58.6
Rhode Island	560	54.8	784	82.6	862	89.1
Vermont	194	43.6	247	48.1	293	53.0
Middle Atlantic	21,827	58.5	23,615	64.8	21,990	58.9
New Jersey	3,838	53.3	4,456	62.3	4,419	58.5
New York	11,474	62.8	10,874	61.8	9,256	51.9
Pennsylvania	6,515	55.1	8,285	69.7	8,315	69.5
MIDWEST	32,580	57.5	39,836	67.8	45,562	76.7
East North Central	22,514	55.8	27,433	66.3	35,330	72.6
Illinois	6,914	62.1	7,311	63.8	7,303	63.1
Indiana	2,964	56.9	3,876	76.7	4,690	84.9
Michigan	4,884	54.8	6,752	73.1	7,965	87.3
Ohio	5,443	51.8	6,859	66.1	6,314	58.4
Wisconsin	2,389	53.9	3,635	76.7	4,058	84.7
West North Central	10,074	61.6	12,303	71.4	15,232	86.5
Iowa	1,753	61.9	2,210	76.8	2,623	89.7
Kansas	1,511	67.2	1,377	58.8	1,715	70.0
Minnesota	2,851	53.7	2,809	68.7	3,576	85.5
Missouri	2,801	59.7	3,629	73.6	4,366	86.7
Nebraska	1,105	74.2	1,287	81.7	1,586	98.3
North Dakota	423	64.3	494	75.3	693	100.5
South Dakota	630	64.4	497	72.2	673	94.9
SOUTH	31,957	50.6	47,389	62.1	54,401	67.2
South Atlantic	14,679	47.6	22,126	59.8	24,896	64.0
Delaware	247	44.8	274	45.9	374	64.5
District of Columbia	326	43.1	688	108.5	784	127.3
Florida	3,325	48.5	5,206	51.9	4,935	64.7
Georgia	2,357	51.1	3,656	66.1	3,742	63.8
Maryland	2,284	57.9	2,691	63.1	2,811	64.3
North Carolina	2,092	41.0	3,324	56.1	4,369	70.5
South Carolina	1,303	50.1	2,177	69.2	2,869	86.5
Virginia	1,940	41.5	3,014	55.8	3,746	66.1
West Virginia	801	45.8	1,096	56.1	1,366	69.7
East South Central	6,833	53.2	10,228	69.6	12,398	82.0
Alabama	1,924	55.7	2,664	64.3	3,477	86.7
Kentucky	1,672	51.7	2,356	64.3	2,731	73.0
Mississippi	1,131	50.8	1,911	75.6	2,218	84.9
Tennessee	2,106	53.4	3,297	71.6	3,962	83.6
West South Central	10,445	51.8	15,035	62.2	17,117	65.3
Arkansas	1,001	51.8	1,608	76.9	2,103	89.1
Louisiana	1,875	51.3	2,252	52.8	2,515	56.1
Oklahoma	1,764	68.6	2,198	71.6	2,371	71.5
Texas	5,805	51.6	8,977	61.7	10,128	63.8
WEST	18,501	52.9	22,674	51.8	24,740	52.7
Mountain	4,820	57.7	7,439	64.3	8,765	65.7
Arizona	930	51.8	1,835	66.4	2,138	69.7
Colorado	1,419	63.7	1,896	64.6	1,976	61.9
Idaho	476	66.3	567	59.5	632	62.8
Montana	328	47.8	592	74.8	698	84.3
Nevada	284	57.4	380	46.8	444	48.5
New Mexico	496	48.4	737	55.7	925	64.6
Utah	651	61.8	1,896	73.3	1,855	63.6
Wyoming	236	70.6	336	69.4	417	81.1
Pacific	13,681	51.3	15,235	47.3	16,475	47.9
Alaska	66	21.6	158	38.7	178	35.4
California	9,790	48.8	10,389	42.5	10,974	42.6
Hawaii	221	28.5	294	32.2	325	31.1
Oregon	1,399	64.5	1,796	67.9	1,839	68.4
Washington	2,205	64.5	2,798	64.9	3,139	71.8

SOURCE: Estimated by Health Resources and Services Administration, Bureau of Health Professions, Division of Associated and Dental Health Professions.

1/ Excludes counts of pharmacists in U.S. Possessions.

Projections of future supply in the H.H.S. Report are based on the basic assumptions that all existing schools will remain open and that on the average they will maintain their most recent enrollment levels. On this basis, the total entry of new pharmacy graduates between 1984-85 and 1999-2000 would be 88,200 new graduates or 47 percent of all pharmacists active by the end of the century. See Table 8.

TABLE 8

Number of Active Pharmacists and Pharmacist-to-Population Ratios: Selected Years, Estimated 1978-1984, and Projected 1985-2000

Year and alternative projection	Number of active pharmacists	Active pharmacists per 100,000 total population
1970	113,700	54.4
1975	122,800	56.6
1980	143,800	63.0
1984	157,000	66.0
1985	159,200	66.4
Low	159,200	66.4
High	159,200	66.4
1990	170,800	68.1
Low	169,800	67.7
High	171,500	68.4
1995	181,200	69.6
Low	177,200	68.0
High	184,100	70.7
2000	188,200	70.0
Low	181,500	67.5
High	193,200	71.9

Source: Health Resources and Services Administration, Bureau of Health Professions, Division of Associated and Dental Health Professions, 1986.

With these assumptions, the total supply of active pharmacists is projected to increase from 157,000 in 1984 to 170,800 in 1990 and 188,200 in 2000, a net increase of 31,200 during the projection period. The ratio of active pharmacists per 100,000 population is projected to increase from 66.0 in 1984 to 68.4 in 1990 and 70.2 by the year 2000.

Expected growth in the active supply of pharmacists would result from substantial growth in the number of female pharmacists. The number of females active in pharmacy is projected to grow from 37,400 in 1984 to 53,000 in 1990 and to 76,100 in 2000. While females constituted 24 percent of the active supply in 1984, they are projected to represent 31 percent of the active supply in 1990 and 40.4 percent by the end of the century. See Table 9.

TABLE 9

Number of Active Pharmacists, By Sex: Estimated 1984, and Projected for Selected Years, 1985-2000

Year	Number of active pharmacists	Male pharmacists	Female pharmacists	Percent female of all pharmacists
1984	157,000	119,600	37,400	23.8
1985	159,200	119,300	39,900	25.1
1990	170,800	117,800	53,000	31.0
1995	181,200	115,600	65,600	36.2
2000	188,200	112,100	76,100	40.4

1/ The basic methodology was used for all of these projections. Includes pharmacists in Federal service; also includes pharmacists in U.S. Possessions.

Source: Health Resources and Services Administration, Bureau of Health Professions, Division of Associated and Dental Health Professions, 1986.

In a low alternative series of projections, the H.H.S. Report assumes that a decrease in enrollments and federal support to pharmacy schools produces an eight percent decline in pharmacy graduates. Accordingly, the total number of new graduates between 1985 and 2000 would be 81,300. In this low scenario, the number of active pharmacists would rise to 181,500 in 2000, for a ratio of 67.5 active pharmacists per 100,000 population. See Table 9.

In a high alternative series, the H.H.S. Report assumes continued enrollment increases due to increased support to pharmacy schools. Accordingly, the total number of new graduates between 1985 and 2000 would be 93,400 or about six percent more than in the basic projections. On this basis, the number of active pharmacists will reach 193,200 in the year 2000, for a ratio of 72.1 pharmacists per 100,000 population.

The H.H.S. Report indicates that the number of prescriptions remains the best single measure of requirements for pharmacists and concludes with an estimate that the supply and requirements for pharmacists should be in close balance at the end of the century.

B. Florida Outlook

The Department of Professional Regulation reports that among 12,304 licensed pharmacists in 1985, 67 percent were estimated to be Florida residents, and of those, 89.6 percent were practicing in community, hospital and other patient settings. Data collected for the Florida Society of Hospital Pharmacy in 1984 showed an estimated 1,792 pharmacists in 256 licensed hospitals in Florida.

By the year 2000, the U.S. population over 65 will reach 35 million, representing one out of every eight Americans. The projections for Florida range higher than the national figures. Studies have shown that individuals over the age of 60 consume about 30 percent of the prescriptions dispensed in the U.S. Pharmacists will be increasingly called upon to meet the needs of the elderly. The University of Florida College of Pharmacy has urged that comprehensive pharmacy manpower studies be conducted on a regular basis due to the fact that the health care needs in Florida remain in a dynamic state and the needs of the State's population for pharmacists are greater than for other states. Many professionals feel that Florida should have a higher than average pharmacist pool because of the large elderly population, the higher level of pharmacy services in the State, and new roles being undertaken by the profession.

In "A Dialogue on Manpower Issues in Florida Pharmacy," a paper authored by U.F. College of Pharmacy faculty Bradham, Shaw, and Lemberger, three primary forces were identified that influence the demand for pharmacists in Florida. The three factors are: (a) large general population growth (three percent per year, resulting in a doubling by 2020), (b) larger proportions of elderly, and (c) a highly competitive business-like health industry, which is conducive to emerging health maintenance organizations (HMOs) and preferred provider organizations (PPOs). The authors predict an increase in demand for health services of all types that will be reflected in increased activity in both community and hospital pharmacies.

The report determined that the Florida pharmacy manpower pool can be reduced by (a) job and career changes, (b) normal workforce attrition, and (c) gender-mix of the workforce; and the manpower pool can be augmented by (a) in-state graduates who successfully pass licensing requirements and remain in Florida to practice, (b) out-of-state graduates who are successful and locate in Florida, and (c) out-of-state pharmacists who qualify for licensure, relocate in Florida and remain actively employed.

The report identified a continuing shortage of pharmacists in Florida into the next century based on projected population growth and demographic patterns, a steady rate of graduates from the State's colleges of pharmacy, and an expected chain community pharmacy growth rate of ten percent per year. Based upon the analysis of these factors and available data the report estimated a shortage of 103 pharmacists a year in Florida for the next ten years.

Department of Health and Rehabilitative Services Pharmacy Inventory 1986

At the request of the Commission, the Office of Comprehensive Health Planning of the Florida Department of Health and Rehabilitative Services undertook to obtain more information about pharmacists and pharmacist supply and demand in Florida. Two surveys were undertaken in the Spring of 1986, a survey of pharmacists and a survey of pharmacies. A random selection of one-half of the pharmacists, holding valid Florida licenses were surveyed. See Appendix A. The mailed inventory produced 4,967 usable questionnaires which was 83 percent of the identified sample of the population. Two-thirds of the respondents (3,314) were Florida active pharmacists. There were 1,172 respondents who reported that they were out-of-state active pharmacists. Additionally, there were 481 inactive pharmacists in the study; 301 living in Florida and 180 out-of-state. To analyze the data, the Office of Comprehensive Health Planning geographically divided the State of Florida into five regions.

Table 10 displays a descriptive analysis of the Florida active pharmacists who returned the survey.

TABLE 10

1986 Pharmacist Inventory
Florida Active Pharmacists
N = 3,314

	Panhandle	N.E. Fla.	Central Fla.	S.W. Fla.	S.E. Fla.	Total
Licensed Pharmacists, DPR 7/86.	654	869	1,501	1,958	3,107	8,089
Adjustment for "Inactives" as Determined from the survey	48	77	82	148	321	676
Total Active Pharmacists	606	792	1,419	1,810	2,786	7,413
Population, 7/86	1,002,812	1,250,380	2,731,161	2,628,303	4,013,187	11,625,843
Active Pharmacists per 10,000 Population	6.04	6.33	5.20	6.89	6.94	6.38
			Sample Data			
Sample Size	302	372	639	798	1,205	3,314
Sample Proportion Based on Total Licensed Pharmacists	46.18	42.81	42.57	40.65	38.78	40.97
Percent Female	30.8	25.3	25.0	26.8	34.1	29.3
Percent Black	6.0	5.4	5.5	5.0	6.0	5.6
Percent Hispanic	2.6	3.5	5.9	6.4	24.6	12.3
Percent First Pharmacy Degree in Florida	36.4	59.4	45.4	31.5	28.5	36.7
Percent Pharm.D. Highest Degree	2.0	7.5	2.5	2.9	5.7	4.3
Percent Certified Consultant	23.2	28.0	22.1	22.2	22.1	22.9
Percent Formal Consultant Arrangement - 1986	9.6	10.2	9.4	6.9	5.7	7.6
Mean Hours Worked Per Week	43.71	44.16	42.46	42.34	41.86	42.52
Percent Saying Supply of Pharmacists Less Than Adequate	24.2	26.6	27.6	25.3	32.1	28.3
Percent With Adequate Access to C.E.	95.7	96.0	95.3	95.7	94.8	95.3
Percent saying C.E. quality Only Fair or Poor	6.0	11.3	6.4	7.8	5.6	7.0
Percent Saying C.E. Quality was Excellent	22.8	19.1	20.0	20.6	26.7	22.8

H.R.S. staff highlighted the following major points from this sample:

(1) Active pharmacists per 10,000 population range from a low of 5.20 in Central Florida to a high of 6.94 in Southeast Florida. The State mean is 6.38.

(2) The highest proportion of "inactives" is in Southeast Florida - 10.3 percent of the DPR licensees.

(3) The sample data reveal that 29.3 percent of the active Florida pharmacists are female, 5.6 percent black, and 12.3 percent Hispanic.

(4) Over a third (36.7%) of the active pharmacists received their first pharmacy degree in Florida.

(5) 4.3 percent report that Pharm.D. as their highest degree.

(6) The average work week was 42.52 hours.

(7) 28.3 percent of respondents thought that the supply of pharmacists in their area was "less than adequate."

(8) Ninety-five percent of the respondents indicated that they had adequate access to continuing education.

(9) Almost 23 percent of the active Florida pharmacists said that the quality of the continuing education courses which they had attended was excellent. Only seven percent thought the quality was only fair or poor.

Further analysis of the inventory produced a distribution of Florida active pharmacists by employment setting. See Table 11. The largest employer of pharmacists is estimated to be the chain pharmacy with 2,846 active pharmacists (38.4 percent of the total).

TABLE 11

Florida Active Pharmacists,
Distribution of Hours Worked per Week
and Pharmacists

	Hours/Week	Pharmacists (Sample)	Total Pharmacists (estimated)
Independent Pharmacy	12.436	438	2,172
Chain Pharmacy	16.323	574	2,846
Hospital Pharmacy	10.046	353	1,750
Nursing Home	.560	20	99
Clinic	.172	6	30
HMO	.484	17	84
Government Facility	.703	25	124
Administrative; Regulatory	.060	2	10
Manufacturing	.186	7	35
Wholesaler	.037	1	5
College of Pharmacy	.173	6	30
Other College	.076	2	10
All Other	1.264	44	218
Total	42.52	1,495[1]	7,413

[1] This question was answered completely by less than 1/2 of the respondents.

The second survey was directed to the holders of pharmacy licenses by the Department of Professional Regulation (DPR). See Appendix B. The total response in license permits of 2,234, represents 56.5 percent of the 3,952

active permits as of the date of the survey. The responses from these businesses were categorized into two groups for analysis: "large operations" that had more than five permits or more than ten allocated pharmacy positions, and "small operations" that did not meet the above conditions. Large pharmacy chains received only one questionnaire, mailed to their corporate address. The analysis of large operations by H.R.S. staff is displayed in Table 12.

TABLE 12

Large Operations
N = 46

Description of the firm:	
Independent Pharmacy	3
HMO-based	2
Hospital Based	24
Chain (<10 Units)	4
Chain (10-50 Units)	9
Chain (>50 Units)	4
	46

Annual Sales:	
No Response	3
Under 1 Million	5
1-2 Million	1
2-10 Million	7
10-50 Million	16
50+ Million	14
	46

Hiring Preference:	
B.S. Pharmacy	21
Pharm.D.	3
No Preference	22
	46

Is the Number of Pharmacies in Your County?	
About Right	23
Excessive	20
Too Few	3
	46

Is the Number of Pharmacists in Your County?	
About Right	11
Excessive	2
Too Few	33
	46

	Mean Starting Salaries	
	Amount	Number of Responses
B.S.	$31,368	43
Pharm.D.	$32,700	36
M.S.	$33,160	22
Ph.D.	$33,506	20

Turnover Rate

Total
16.06

Turnover Rate = The sum of Question No. 8 divided by the sum of Question No. 5. See Appendix B.

H.R.S. staff report that thirteen businesses are chains with ten or more units in the state. Thirty operations reported sales in excess of $10 million. The large operations' first hiring preference is a B.S. pharmacy graduate (45.7 percent), but an even larger proportion, 47.8 percent, showed no preference between the B.S. and the Pharm.D. With regard to the question concerning the number of pharmacies in their counties, 43.5 percent thought the number

excessive; only 6.5 percent thought that there were too few pharmacists in their counties. Mean starting salaries which the large firms were willing to pay a new graduate in pharmacy ranged from $31,368 at the B.S. level up to $33,506 for a Ph.D. Sample size was insufficient to break salary down by region of the state. The annual turnover rate for large operations was 16.06 percent. This is the number of pharmacists who left the firm in the past year divided by the total number presently employed.

Table 13 describes the small pharmacy operations. H.R.S. staff reported that two-thirds of the small operations labeled themselves as independent pharmacies, consistent with the fact that almost 60 percent of them reported annual sales between $200,000 and $1,000,000. In regard to hiring preference, the results were "No Preference" - 48.5 percent; "B.S. Pharmacy" - 43.5 percent; "No Response" - 4.8 percent; "Pharm.D." -3.2 percent. The respondents from small operations clearly thought that the number of pharmacies in their counties was "excessive." The ratio of respondents who said the number was "excessive" to those who said it was "about right" was almost 3:2. In Southeast Florida and Central Florida, it was over 3:2. With regard to the number of pharmacists in their counties, the answer "about right" predominated in every region of the state; but a substantial minority in Central Florida (37.2 percent) and in Southeast Florida (40.6 percent) chose to say that the number of pharmacists was "Too Few". Mean offering salaries to new pharmacy graduates varied no more than five percent across the state. The offer was generally lowest in the panhandle and highest in central and Southeast Florida. The statewide average for the B.S. degree was $29,950 which compares to $31,368 at the large firms. At the Pharm.D. level, the small firms offered $31,454, and the large firms offered $32,700.

TABLE 13

Small Operation
N = 888

Description of the Firm:	No.	%
Independent Pharmacy	589	66.3
HMO-based	24	2.7
Nursing Home Pharmacy	14	1.6
Hospital-based	122	13.7
Chain (<10 Units)	52	5.9
*Chain (10-50 units)	33	3.7
*Chain (>50 units	16	1.8
Other	34	3.8
No Response	4	.5
	888	100.0

Annual Sales	No.	%
Under 200,000	120	13.5
200,000-999,999	509	57.3
1-2 million	100	11.3
2-10 million	67	7.5
*10-50 Million	26	2.9
* 50+ Million	11	1.2
No Response	55	6.2
	888	100.0

Hiring Preference:	No.	%
B.S. Pharmacy	386	43.5
Pharm.D.	28	3.2
No Preference	431	48.5
No Response	43	4.8
	888	100.0

*The "Small Operations" answering in these categories are probably responding for the Total Corporate entity of which they are a part or franchise.

Is the number of pharmacies in your county..?

	Region Not Stated	Panhandle	N.E. Fla.	Central Fla.	S.W. Fla.	S.E. Fla.	Total
About Right	2	39	62	86	81	95	345
Excessive	1	39	43	109	121	174	487
Too Few	0	2	7	5	8	16	38
Total	3	80	112	180	210	285	870
Ratio of Excessive to About Right	.5	1.0	.69	1.65	1.49	1.83	1.41

18 non responses

Is the number of Pharmacists in your county..."

	Region Not Stated	Panhandle	N.E. Fla.	Central Fla.	S.W. Fla.	S.E. Fla.	Total
About Right	2	50	69	90	124	130	465
Excessive	0	10	7	23	26	34	100
Too Few	1	20	33	67	57	112	290
Total	3	80	109	180	207	276	855
Ratio of too few to about right	.5	.40	.48	.74	.46	.86	.62

33 non responses

Mean Starting Salaries

	Panhandle	N.E. Fla.	Central Fla.	S.W. Fla.	S.E. Fla.	Total	N
B.S.	28,144	29,699	30,417	30,528	29,603	29,950	(632)
Pharm..D.	31,333	31,469	31,503	31,484	31,413	31,454	(274)
M.S.	31,000	31,354	30,421	32,013	31,164	31,283	(165)
Ph.D.	31,375	31,695	30,583	32,006	31,572	31,523	(133)

Turnover Rates

Panhandle	N.E. Fla.	Central Fla.	S.W. Fla.	S.E. Fla.	Total
15.20	14.43	15.03	15.47	20.90	17.13

Turnover Rate = The sum of Question No. 8 divided by the sum of Question No. 5. See Appendix B.

The turnover rate at small operations was 17.13 percent, more than a full percentage point above that of the large firms. Turnover ranged from a low of 14.43 percent in Northeast Florida to a high of 20.90 percent the southeast region. The significance of the high turnover rates in the State remains uncertain. There has been a variety of explanations, however, for the high rates including pharmacist dissatisfaction and new and plentiful employment opportunities.

The last section of the questionnaire which was directed to pharmacies was a set of twenty-four statements referring to typical employment functions of a firm's staff pharmacists. See Appendix B. The statements were taken from the "Standards of Practice for the Profession of Pharmacy." The respondents were asked to indicate whether their pharmacists were expected to perform these functions daily, weekly, occasionally, or never. The analysis in Table 14, prepared by the University of Florida College of Pharmacy, indicates a level of expectation for the pharmacy practice setting that emphasizes clinical pharmacy skills.

National Association of Chain Drug Stores, Inc. Manpower Study

In 1986 the National Association of Chain Drug Stores, Inc. (NACDS) retained Dr. Robert F. Lanzillotti to address the manpower issues through a review and evaluation of existing manpower surveys, an assessment of the adequacy of current supply and projected demand, and suggestions for a manpower forecasting model using Florida data. He concludes that (1) there is currently a shortage of pharmacists in Florida, (2) this shortage may be most severe in the community pharmacy sector, (3) the shortage is likely to increase over the next 10 to 15 years, (4) the existing forecasting models on national pharmacy manpower requirements may not accurately reflect supply and

TABLE 14

The following 24 statements refer to the employment functions of your firm's pharmacists. Enter the appropriate number for your response to each statement in the box provided.

I expect pharmacists whom I employ or supervise to

SMALL OPERATIONS				LARGE OPERATIONS				CHAINS ONLY				
daily	weekly	occasionally	never	daily	weekly	occasionally	never	daily	weekly	occasionally	never	
19	4	51	27	33	2	51	13	57	--	29	14	1. Establish and/or implement written policy and procedures for pharmacy operation.
13	6	54	27	200	--	55	24	14	--	62	24	2. Initiate a formulary system to meet the needs of patients and practitioners.
31	23	41	7	53	28	8	8	52	33	5	10	3. Establish and monitor a system to insure proper storage conditions for perishable pharmacy items and removal of out-dated items.
19	12	37	31	2	15	40	42	--	14	43	43	4. Negotiate with vendors regarding specifications, cost, delivery schedules, etc.
24	5	42	29	33	4	24	38	38	--	19	43	5. Establish, administer, and interpret personnel policies procedures.
95	1	3	1	100	--	--	--	100	--	--	--	6. Verify prescription orders for completeness and legality, including dosage, route, frequency, duration, and interactions.
99	1	1	--	100	--	--	--	100	--	--	--	7. Check final product for labeling and product accuracy prior to dispensing.
37	9	43	12	16	--	71	13	14	--	16	10	8. Select the manufacturing source of generic drug(s)/product(s) to be dispensed.
82	3	11	4	91	--	4	4	86	--	5	10	9. Obtain information for entry into patient record and assess and evaluate the prescription and patient information to determine appropriate course of action (e.g., timing of dosage schedule, advising patient of possible adverse effects).
85	2	11	2	64	7	24	4	90	5	5	--	10. Provide patient consultation regarding medication dosage, dosage frequency; and method of administration.
85	2	11	2	69	4	20	7	100	--	--	--	11. Advise patient of potential drug-related or health-related conditions which may develop from the use of medication.
75	2	14	9	49	2	29	20	67	5	24	5	12. Consult with patient to properly identify symptoms in order to advise for self-medication.
79	3	12	6	58	7	20	16	62	10	10	--	13. Refer patient to other health care providers and/or health resources when indicated.
34	7	31	28	36	9	29	27	24	10	19	48	14. Regularly evaluate and monitor therapeutic response of patient to prescribed medication, record evidence of monitoring in appropriate record, and recommend therapeutic regimen and modifications where necessary.
48	7	36	9	40	7	44	9	38	10	38	14	15. Upon request review and interpret a medication history to the physician, patient, or other persons involved with the patient's care.
53	7	34	7	53	2	40	4	43	--	48	10	16. Make recommendations regarding drug therapy to the physician, patient, or other person involved with the patient's care.
69	19	19	5	60	7	24	9	76	10	10	5	17. Monitor the patient's record for indications of drug abuse or misuse of prescription medications.
62	6	24	8	33	9	40	18	57	5	33	5	18. Advise patients on personal health matters (e.g., smoking, drug abuse, etc.) or use of medicinal or surgical appliances (e.g., inhalers, colostomy bags, trusses).
12	4	28	56	14	2	43	41	--	--	35	65	19. Develop and implement system for drug distribution and drug administration in institutional settings (e.g., nursing homes, hospitals, etc.)
4	3	72	21	2	4	93	--	--	5	95	--	20. Participate in appropriate community educational programs relating to health care and drugs (e.g., drug abuse, alcoholism, hypertension).
4	4	53	40	2	7	80	11	--	--	81	19	21. Organize and/or participate in "in-pharmacy" education programs for other pharmacists or health professionals.
69	7	22	7	82	4	13	--	71	10	19	--	22. Informally respond to drug information questions received from physicians, patients, etc.
16	4	15	64	21	7	25	48	--	5	35	60	23. Provide the services of a Florida consultant pharmacist to a hospital or nursing home.
22	3	25	51	14	2	21	62	19	--	29	52	24. Perform services under the Florida self-care pharmacist regulations.

Source: H.R.S. Pharmacists Inventory and
The University of Florida College of Pharmacy.

demand, and Florida may not be able to fill its needs from the national pool, and (5) it appears that the State has a serious problem in its pharmacist manpower outlook. Because of the uncertainty in the manpower analysis, he urges caution to policymakers in changing educational programs.

Dr. Lanzillotti reviewed three recent studies related to pharmacy manpower issues and the reliability of estimates and projections. He concluded that the Bradham, Shaw, and Lemberger (1985) study, "A Dialogue on Manpower Issues in Florida Pharmacy" is the only study that qualifies as a "proper manpower requirements analysis" in that the report considers both supply and demand in current and future contexts. Dr. Lanzillotti characterized the Florida Department of Health and Rehabilitative Services (HRS) inventory as a survey designed partially to solicit licensed pharmacists' opinions on various subjects. He pointed out that HRS data on current demand for large operations alone "indicates a more severe current and future shortage than would be suggested by the other data." The third study, "Report from the Pharmacy Manpower Committee of the American Association of Colleges of Pharmacy," centers on pharmacy education and forecasts a decline nationally of 5.8 percent in pharmacy school graduates between 1986 and 1996. He described the studies as inadequate for estimating Florida pharmacy manpower requirements and recommended caution in planning educational programs for pharmacy manpower needs. Utilizing population forecasts and estimates of the number of active pharmacists required on alternative assumed ratios of pharmacists per 100,000, Dr. Lanzillotti estimated demand for active pharmacists for the year 2000. See Table 15.

TABLE 15

Estimated Demand for Active Pharmacists Required in State of Florida as of the Year 2000

Population Forecast for the year 2000	64.3 Ratio	66.6 Ratio	68.0 Ratio	69.7 Ratio	72.5 Ratio
UF BEBR 15,683,000	10,082	10,443	10,664	10,929	11,368
U.S. Census 17,438,000	11,213	11,614	11,858	12,154	12,642

He projected a state-wide demand of 12,000 or more active pharmacists. If a 16 percent turnover/attrition rate from the HRS study and a five to ten percent growth rate in community pharmacies (Bradham et al. study) are considered, then a much larger overall demand may develop. As important factors influencing this estimation, Dr. Lanzillotti cited Florida's projected strong population growth and demographic patterns, especially in the elderly cohort, expanded pharmacist roles, the trend toward a higher proportion of

female pharmacists, and the competitive environment and market structure. He estimated a shortfall of Florida pharmacists through the year 2000 as possibly reaching 500 or even greater by the mid-to-late 1990's. He noted, also, that technological changes in the delivery systems for pharmacy services may not result in significant reductions in manpower requirements.

IV. PHARMACY EDUCATION

A. History

Like the pharmacy profession, pharmacy education evolved slowly and it has only been in the last 125 years that a structured program combining practice with coursework has developed. From the early primitive civilizations through the Dark Ages in Europe, medicine and the use of curatives was practiced primarily in the various temples and churches as pharmacy was interrelated with medicine and religion. Apprenticeship periods provided the credentials for practice.

Major advances in 16th Century Europe enhanced pharmacy education as they had the profession as a whole. Guilds established in this period set standards and educational requirements, founded schools, and generally raised the quality of the apothecaries' art. In this era, the development of printing presses encouraged the publication and dissemination of texts and specialized periodicals written by pharmacists rather than physicians. Nonetheless, apprenticeships continued to provide the educational base for practicing apothecaries.

The development of pharmaceutical education in the United States was delayed by the generally slow evolvement of the profession. Although early colonization created a great need for medical service, few physicians or pharmacists were available in the colonies, and pharmacy was taught only through the apprenticeship system.

Few attempts were made to provide instruction for pharmacists until the formation of the Philadelphia College of Pharmacy in 1812. For most of the 19th Century, pharmacy education continued to be promoted through pharmaceutical associations, and education ranged from a 20-week course at one school to a four-month evening program in another, all supplemented by the traditional apprenticeship periods. By the Civil War, the pioneer pharmacy schools established by early pharmaceutical associations gave way to various pharmacy schools founded privately by groups of pharmacists or universities and colleges, or as divisions of medical colleges.

After the Civil War, additional colleges of pharmacy opened, but there was little standardization of curricula or degrees granted. Few pharmacists attended lectures and fewer still graduated. Growing concerns over the expanding demands in pharmaceutical knowledge and additional needs for formal education promoted the founding of the American Association of Colleges of Pharmacy for the purpose of promoting and improving pharmaceutical education and research in the United States. At this time, admission requirements were virtually nonexistent, and it was not until the 1920s that a high school diploma became a requisite for admission.

The 20th Century brought major changes in pharmacy education. Prior to 1932, prospective pharmacists needed only two years to complete their professional training; however, in 1932 program completion was raised to three years. Seven years later, the four-year B.S. program was the norm nationally. The current five-year baccalaureate programs were implemented by all schools and

colleges of pharmacy by 1960. So, while formal education initially took only two years of academic preparation, by 1960 a five-year degree granting B.S. program was the standard. The need to include general education courses and electives and to integrate courses prompted this extension. The role of apprenticeships in pharmacy education decreased rapidly as academic requirements increased, and an internship period, either during college years or after graduation, has predominated. The movement for a six-year Pharm.D. programs was active by 1948, but it was not until the mid 1970s that the six-year Pharm.D. was actively implemented.

B. Accreditation

Pharmacy colleges are accredited for six-year periods by the American Council on Pharmaceutical Education (ACPE), a specialized program accrediting agency. Established in 1932, ACPE is the national accrediting agency in pharmacy and is recognized by the U. S. Department of Education and the Council on Postsecondary Accreditation (COPA). ACPE is an autonomous agency sponsored and supported to some degree by three national pharmaceutical associations. Major funding resources for ACPE's activities are provided by the American Foundation for Pharmaceutical Education, which is supported almost entirely by the pharmaceutical industry.

There are presently 72 accredited schools and colleges of pharmacy located in 42 states, the District of Columbia, and Puerto Rico; 18 are private institutions and 54 are public. See Table 16. Both the University of Florida College of Pharmacy and Florida A & M University's School of Pharmacy are fully accredited by ACPE.

C. Curriculum

Today, two undergraduate professional curricula lead to pharmacy degrees; the five-year program culminates in a Bachelor of Science in Pharmacy (B.S.) while the six-year curriculum leads to the Doctor of Pharmacy (Pharm.D.), a first-professional degree. The Pharm.D. is available in different schools and colleges of pharmacy as a post-B.S. degree, where one to two years of additional study is required after the B.S., or the entry-level Pharm.D., a 6-year degree program. Both the B.S. degree and the first professional Pharm.D. degree qualify graduates for licensure examination and both are referred to as entry degrees. The University of Florida first offered a post-B.S. program leading to the Pharm.D. in 1975; Florida A & M University did so in 1983.

Specific admission requirements to pharmacy programs vary. A few colleges admit students directly from high school, but most colleges require one or two years of pre-pharmacy education in an accredited junior/community college, college, or university. A pre-pharmacy curriculum usually emphasizes mathematics and basic sciences, but also includes courses in the humanities, social sciences, and business administration. According to the American Association of Colleges of Pharmacy (AACP) Fall 1987 admissions requirements, 63 schools will offer the B.S. or B.Pharm. degree; of these 50 will offer only the baccalaureate degree and 13 will offer both the B.S. and Pharm.D. degrees.

Ten schools and colleges will offer only the Pharm.D. degree. The AACP does not distinguish in their admissions requirement supplement for 1987 between the entry-level Pharm.D. and the post-B.S. Pharm.D. degrees.

TABLE 16

Colleges of Pharmacy of the United States
1986

State	Institution	Year Established	Programs Offered B.S.	Pharm.D.[1]	Pharm.D.[2]
Alabama	Auburn	1895	x		x
	Samford U.	1932	x		
Arizona	U. of Arizona	1947	x	x	
Arkansas	U. of Arkansas	1951	x		x
California	U. of California	1872		x	
	U. of the Pacific	1955	x	x	x
	U. of Southern California	1905		x	x
Colorado	U. of Colorado	1911	x		
Connecticut	U. of Connecticut	1925	x		
District of Columbia	Howard U.	1868	x	x	x
FLORIDA	FLORIDA A & M UNIVERSITY	1951	x	x	x
	U. OF FLORIDA	1923	x	x	
Georgia	Mercer U.	1903		x	
	U. of Georgia	1903	x		x
Idaho	Idaho State U.	1918	x		
Illinois	U. of Illinois	1859		x	x
Indiana	Butler U.	1904	x		
	Purdue U.	1884	x	x	x
Iowa	Drake U.	1927	x		
	U. of Iowa	1885	x		x
Kansas	U. of Kansas	1885	x		
Kentucky	U. of Kentucky	1870	x	x	x
Louisiana	Northeast Louisiana U.	1956	x		
	Xavier U.	1927	x		
Maryland	U. of Maryland	1840	x	x	x

TABLE 16 (cont.)

Colleges of Pharmacy of the United States
1986

State	Year Institution	Established	Programs Offered B.S.	Pharm.D.[1]	Pharm.D.[2]
Massachusetts	Massachusetts College of Pharmacy Allied Health Services	1967	x		x
	Northeastern U.	1927	x		x
Michigan	Ferris State College	1893	x		
	U. of Michigan	1868		x	x
	Wayne State U.	1923	x		x
Minnesota	U. of Minnesota	1892	x	x	x
Mississippi	U. of Mississippi	1908	x		
Missouri	St. Louis College of Pharmacy	1865	x	x	
	U. of Missouri--Kansas City	1885	x	x	
Montana	U. of Montana	1907	x		
Nebraska	Creighton U.	1900	x	x	x
	U. of Nebraska	1908			x
New Jersey	Rutgers	1892	x		
New Mexico	U. of New Mexico	1945	x		
New York	Arnold & Marie Schwartz College of Pharmacy and Health Science	1891	x		
	St. John's U.	1929	x		x
	State U. of New York--Buffalo	1886	x		x
	Union University--Albany	1881	x		
North Carolina	Campbell University	1986		x	
	U. of North Carolina Chapel Hill	1897	x	x	x
North Dakota	North Dakota State U.	1902	x		x
Ohio	Ohio Northern U.	1884	x		
	Ohio State U.	1885	x		x
	U. of Cincinnati-Medical	1871	x		x
	U. of Toledo Ctr.	1904	x		
Oklahoma	Southwestern Oklahoma St. U.	1941	x		
	U. of Oklahoma		x		
Oregon	Oregon State U.	1898	x		

TABLE 16 (cont.)

Colleges of Pharmacy of the United States
1986

State	Institution	Year Established	B.S.	Programs Offered Pharm.D.$_1$	Pharm.D.$_2$
Pennsylvania	Duquesne U.	1925	x		x
	Philadelphia College of Pharmacy and Science	1821	x		x
	Temple U.	1901	x		
	U. of Pittsburgh	1878	x		
Puerto Rico	U. of Puerto Rico	1913	x		
Rhode Island	U. of Rhode Island	1957	x		x
South Carolina	Medical U. of South Carolina	1866	x		x
	U. of South Carolina	1924	x	x	x
South Dakota	South Dakota State U.	1888	x		
Tennessee	U. of Tennessee	1898		x	
Texas	Texas Southern U.	1949	x		x
	U. of Houston	1947	x		
	U. of Texas at Austin	1893	x	x	x
Utah	U. of Utah	1946	x	x	x
Virginia	Virginia Commonwealth U.	1893	x		x
Washington	U. of Washington	1894	x		x
	Washington State U.	1896	x		
West Virginia	West Virginia U.	1914	x		
Wisconsin	U. of Wisconsin--Madison	1883	x		
Wyoming	U. of Wyoming	1946	x		

Notes: Pharm.D.$_1$ is a first professional degree.
Pharm.D.$_2$ is a post-B.S. degree.

Source: Pharmacy Schools Admission Requirements Annual Supplement, A.A.C.P., 1986.

For the baccalaureate degree, pharmacy schools adhere to various five-year program sequences, referred to as 0-5, 1-4, and 2-3. For example, a school under an 0-5 program provides all five years of study and admits students directly from high school. Of the sequence options, the 2-3 alternative is used by over half of the pharmacy schools. Applicants may complete the two-year pre-pharmacy courses at the university or transfer from a junior or community college or another four-year college or university.

Under the Florida articulation agreement, the pre-pharmacy program may be completed at any of the community colleges or four-year campuses in the state. The University of Florida follows the 2-3 program and Florida A & M University uses the 0-5 sequence.

The Doctor of Pharmacy program evolved from the need for pharmacists to be more patient-care oriented and to develop in-depth practice skills. New "Standards of Practice for the Profession of Pharmacy," established in 1979, identify for the Pharm.D. professional curriculum four areas of responsibility for the pharmacists: (1) general management and administration of pharmacy, (2) activities related to processing the prescription, (3) patient care functions, and (4) education of health care professionals and patients.

Students enroll in the Pharm.D. program either at the entry level for six years of study or at the post-baccalaureate level for one or two years beyond the baccalaureate degree. In Florida, the Pharm.D. is offered at both the University of Florida and Florida A & M University at both levels. The University of Florida offered the post-B.S. level option until 1984; in 1983 and 1984 students were allowed to change to the entry-level Pharm.D. curriculum after their second year. Florida A & M began the post-B.S. in 1978 and the entry-level Pharm.D. in 1985.

The overall pharmacy curriculum is comprised of basic science and clinical science courses and is divided into pre-pharmacy and professional pharmacy. For entrance into the professional curriculum, a minimum of two years (60 semester hours) of pre-pharmacy are required, including coursework in mathematics, chemistry, biology, physics, English, humanities, and social sciences. The professional curriculum constitutes the remaining three years of a baccalaureate degree program or four years of a doctor of pharmacy program. Courses include those in the advanced sciences and mathematics, as well as others related to pharmaceutics, pharmacology, therapeutics, pharmaceutical law and management, and medicinal chemistry. The last year of the baccalaureate degree covers practical courses and clinical clerkship experience. The last year of the Pharm.D. program is also for clinical experience. Clinical training sites for the Florida programs include patient-care institutions such as hospitals and family practice centers.

There has been an increasing controversy nationwide concerning the future of the baccalaureate and the Pharm.D. programs as dual tracks to entry to the profession. Some educators and members of the profession predict that the changing nature of the health field and the pharmacy field will necessitate the imposition of a more advanced and clinically-oriented entry-to-practice degree. Other members of the profession and the pharmacy industry, however, are concerned about issues such as a possible over-education of pharmacy practitioners, an underutilization of pharmacy skills in practice, and increased costs in providing additional education preparation. The issue is of considerable importance in Florida as the two colleges of pharmacy have requested permission of the Board of Regents to terminate the baccalaureate program and to offer uniquely the Pharm.D. program.

D. Enrollment and Degrees Awarded

Prior to 1986, the pharmacy profession had experienced declining enrollments since peaking in the mid-1970s. The combined effects of reduced federal support and a general decrease in enrollments nationally in higher education institutions have resulted in a drop of 56% since 1975 in pharmacy enrollments. There are indications, however, that the prior rapid decline is stabilizing. Table 17 compares last-three-year enrollments in both degree programs for 1983-84 to 1985-86. Last-three-year 1984-85 enrollments of 18,646 for all pharmacy schools declined by only 0.98 percent from 1983-84, a loss of 185 students, but 1985-86 enrollments of 19,098 reflect a 2.4 percent increase over 1984-85. Of the 18,646 full-time enrollment in the last three years of professional study for 1984-85, 16,772 were in baccalaureate programs and 1,874 were in Pharm.D. first professional programs. Concurrently in 1985-86, 17,044 students enrolled in baccalaureate programs and 2,054 were in Pharm.D. first professional programs. In reporting the 1985-86 enrollment figures, the American Association of Colleges of Pharmacy, in addition to reporting last-three-year figures, has also now included enrollments for the pre-professional years to produce total global enrollment figures. These show an 8.3 percent increase in total enrollments from 1985-86 over 1984-85 as schools reported a total enrollment of 24,820 students compared to 22,919 a year ago. This is the first time since the mid-seventies that entry-level enrollments have increased; the major impetus for the 8.3 percent total enrollment increase has been generated by first and second-year classes.

TABLE 17

Full-Time Pharmacy Enrollments
Last Three-Years
1983-84 to 1985-86

	B.S.	Pharm.D.	Total
1983-84	17,127	1,704	18,831
1984-85	16,772	1,874	18,646
1985-86	17,044	2,054	19,098

Source: American Association of Colleges of Pharmacy

Table 18 lists by state the number of entry-level positions available in the first professional year per 100,000 population. The average number of positions available nationally is 3.9. Among the seven southern states with colleges of pharmacy that had positions open in 1985-86, the average number was 2.8. The State of Florida, with 1.0 position available per 100,000 population, falls well below both the regional and national averages.

TABLE 18

Entry-Level Positions Per 100,000 Population 1985-86

State	Number of Schools	Size of Entry-Level Class[a]	Number of Positions per 100,000 population
Alabama	2	165	4.1
Arizona	1	67	2.1
Arkansas	1	82	3.5
California	3	368	1.4
Colorado	1	67	2.1
Connecticut	1	80	2.5
D. of Columbia	1	N/A	N/A
FLORIDA	**2**	**118**	**1.0**
Georgia	2	259	4.3
Idaho	1	54	5.4
Illinois	1	106	0.9
Indiana	2	199	3.6
Iowa	2	144	5.0
Kansas	1	93	3.8
Kentucky	1	98	2.6
Louisiana	2	233	5.2
Maryland	1	94	2.1
Massachusetts	2	232	4.0
Michigan	3	362	4.0
Minnesota	1	92	2.2
Mississippi	1	120	4.6
Missouri	2	223	4.4
Montana	1	48	5.8
Nebraska	2	140	8.7
New Jersey	1	154	2.0
New Mexico	1	50	3.4
New York	4	653	3.7
North Carolina	2[b]	172	2.7
North Dakota	1	70	10.2
Ohio	4	364	3.4
Oklahoma	2	185	5.6
Oregon	1	114	4.2
Pennsylvania	4	558	4.7
Puerto Rico	1	118	N/A
Rhode Island	1	73	7.5
South Carolina	2	147	4.4
South Dakota	1	53	7.5
Tennessee	1	51	1.1
Texas	3	387	2.4
Utah	1	52	3.1
Virginia	1	112	2.0
Washington	2	121	2.7
West Virginia	1	72	3.7
Wisconsin	1	99	2.1
Wyoming	1	35	6.9
	73	7,084	166.4

Note: [a] First Professional year enrollments.

[b] Reflects enrollment from the U. of North Carolina only; Campbell University initiated enrollments in Fall 1986.

Table 19 compares minority and female enrollment for 1980 to 1985. The six-year period is notable for the absolute growth in black enrollment of 177 students and an increase of 18.7 percent, while Hispanics decreased by 188 or 12.6 percent. Notable increases are also evident in female enrollments -- 12 percent in the six-year period.

TABLE 19

Total Enrollment in Entry Level Degree Programs By Race and Gender 1980 - 1985

	BLACK AMERICAN	%CHANGE FROM PREVIOUS YEAR	HISPANIC AMERICAN	%CHANGE FROM PREVIOUS YEAR	ASIAN AMERICAN	%CHANGE FROM PREVIOUS YEAR	FEMALE	%CHANGE FROM PREVIOUS YEAR
1980	945	--	934	--	1035	--	12,600	--
1981	932	-1.4%	787	-15.7%	1040	0.5%	12,231	-2.9%
1982	935	0.3%	784	-0.4%	1072	3.1%	12,107	-1.0%
1983	1,019	9.0%	787	0.4%	922	-14.0%	12,024	-0.7%
1984	1,098	7.8%	763	-3.0%	1086	17.8%	12,737	5.9%
1985	1,122	2.2%	816	6.9%	1079	-0.6%	14,135	11.0%

Source: American Association of Colleges of Pharmacy, 1986

While declining pharmacy school total enrollments have stabilized, the number of students seeking the Pharm.D. degree at the entry level has increased more than 50 percent over 1975-76. The numbers of degrees awarded in the three programs for 1975 and 1984 are contained in Table 20. These reveal that during the ten-year period the number of B.S. degrees awarded decreased by 13.3 percent, the first professional Pharm.D. degrees awarded increased by 33.2 percent, and the post-B.S. Pharm.D. degrees conferred increased by 143.4 percent.

TABLE 20

Pharmacy Degrees Awarded 1975 and 1984

Program	1975	1984	% Gain or Loss
B.S.	6,399	5,546	- 13.3%
Pharm.D. (1st)	313	417	+ 33.2%
Pharm.D. (2nd)	136	331	+143.4%

Pharm.D. (1st): Doctor of Pharmacy as first professional degree.
Pharm.D. (2nd): Doctor of Pharmacy as post-B.S. degree.

Source: American Association of Colleges of Pharmacy.

Table 21 and 22 detail information for pharmacy schools in the South (District III) that compares Florida pharmacy schools' position with respect to the colleges in their region. Among the eleven institutions with B.S. enrollments in the final three years of the pharmacy program, the University of Florida ranks seventh while Florida A & M University ranks tenth. Among the six institutions with Pharm.D. programs, the University of Florida ranks second and Florida A & M University ranks fourth. For B.S. degrees conferred, the University of Florida ranks fourth and Florida A & M University ranks tenth. For $Pharm.D._1$ degrees conferred, the University of Florida ranks third among the three institutions and Florida A & M ranks second. In $Pharm.D._2$ degrees conferred, there is little difference among the seven institutions.

In 1984-85, the two Florida pharmacy colleges conferred 15 percent of all B.S. degrees, 9 percent of all $Pharm.D._1$ degrees, and 33 percent of all $Pharm.D._2$ degrees. In enrollment, the two colleges accounted for 12 percent of total enrollment in the B.S. program and 29 percent of total $Pharm.D._1$ enrollment.

TABLE 21

Enrollment (Final Three Years)
District III
Fall, 1985

Institution (alphabetical by state)	Enrollment B.S.	Pharm.D.
Auburn	231	--
Samford	134	--
FLORIDA A & M UNIVERSITY	**128**	**47**
FLORIDA, UNIVERSITY OF	**190**	**75**
Mercer University, Georgia	--	243
Georgia, University of	388	--
Mississippi, University of	297	--
North Carolina, University of	480	4
Puerto Rico, University of	293	--
Medical University of South Carolina	165	--
South Carolina, University of	217	6
Tennessee, University of	76	51
Totals	2,599	426

Source: American Association of Colleges of Pharmacy

TABLE 22

Number of Degrees Conferred
District III
1985

Institution (Alphabetical by state)	Degrees Conferred B.S.	Pharm.D.[1]	Pharm.D.[2]
Auburn	59	--	4
Samford	57	--	--
FLORIDA A & M UNIVERSITY	**35**	**6**	**7**
FLORIDA, UNIVERSITY OF	**89**	**1**	**8**
Mercer University, Georgia	--	68	--
Georgia, University of	130	--	4
Mississippi, University of	74	--	--
North Carolina, University of	148	--	6
Puerto Rico, University of	95	--	--
Medical University of South Carolina	34	--	8
South Carolina, University of	51	--	--
Tennessee, University of	79	--	8
Totals	851	75	45

Source: American Association of Colleges of Pharmacy

E. Tuition and Fees

Table 23 shows the estimated tuition and fees costs for the first professional year in the 13 pharmacy colleges and schools in the southern region, District III. Resident estimated yearly tuition and fees range from a high of $6,450 to a low of $697. Among these, Florida A & M University ranks twelfth and the University of Florida ranks tenth. For non-residents, where tuition ranges from a high of $6,450 to a low of about $3,000, Florida A & M University is eighth and the University of Florida is seventh.

TABLE 23

Estimated First Professional Year
Tuition and Fees
District III
Fall 1987

Institution	Resident	Non-Resident
Mercer University	$6,450	$6,450
Campbell University	$6,000	$6,000
Samford	$3,690	$3,690
Tennessee, University of	$1,992	$4,143
Georgia, University of	$1,884	$5,088
Mississippi, University of	$1,867	$3,049
South Carolina, University of	$1,608	$3,288
Medical University of South Carolina	$1,500	$3,000
Auburn	$1,300	$3,000
UNIVERSITY OF FLORIDA	**$1,200**	**$3,500**
North Carolina, University of	$1,100	$3,800
FLORIDA A & M UNIVERSITY	**$1,018**	**$3,381**
Puerto Rico, University of	$697	Varies

Source: Pharmacy School Admission Requirements Annual Supplement
American Association of Colleges of Pharmacy.

V. PHARMACY PROGRAMS IN FLORIDA

A. College of Pharmacy, University of Florida

1. Introduction

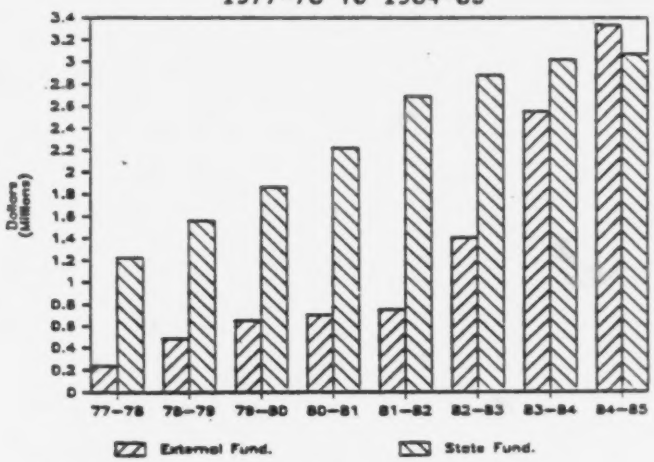
Pharmacy education at the University of Florida originated as a Pharmacy Program in 1923 with 43 students. The Program became a College in 1925, and in 1954, the College became a unit of the new J. Hillis Miller Health Center.

The five-year B.S. in Pharmacy program was initiated in 1960 and the post-baccalaureate program for the Pharm.D. degree was incorporated in 1975. The Pharm.D. entry-level program was scheduled for implementation in 1985, as baccalaureate students in 1983 and 1984 were allowed to change to the Pharm.D. curriculum. The first students were matriculated in the College of Pharmacy under the Doctor of Pharmacy curriculum in 1985.

The College of Pharmacy is organized into five academic departments: Medicinal Chemistry, Pharmaceutics, Pharmacodynamics, Pharmacy Health Care Administration, and Pharmacy Practice. For 1985 there were 42.25 FTE faculty positions: a total of 122 faculty were engaged in teaching and research, 28 in Pharmaceutical Sciences, 13 in Clinical, and 81 as adjunct faculty. Various faculty members supervise numerous research programs covering a broad spectrum of research interests. Support for this research comes primarily from external sources. In 1984-85, for the first time, funding from external sources exceeded state funds. (See Figure 4). While the College anticipates continued growth due to the addition of new faculty members as well as to the availability of untapped research potential among younger faculty, adequate space for personnel and equipment for research is expected to be a problem.

FIGURE 4

Comparison of External and Internal Funding Sources,
College of Pharmacy, University of Florida
1977-78 TO 1984-85



Source: College of Pharmacy, University of Florida.

Off-campus clerkship teaching sites in nine geographic locations are utilized to implement the Doctor of Pharmacy program. These fourteen locations, which include both institutional and community pharmacy clerkship sites, are in addition to six on-campus (Gainesville area) training sites.

The College is involved in both contract management and drug information services. The service contracts have enhanced not only the College's ability to offer comprehensive pharmaceutical services, but also the establishment of new clinical teaching sites. In 1972 the College implemented a statewide drug information service for pharmacists and other health professionals. This service also supplements the instructional program for those students completing their clerkship rotations.

2. Educational Facilities

In the J. Hillis Miller Health Science Center, the College occupies 31,917 net assignable square feet (NASF). Under the state Board of Regents space formula, the College qualifies for 70,189 NASF. A 900 square foot modular office unit purchased in 1984 and externally funded renovation projects have alleviated some space needs. An additional 12,000 to 15,000 net square feet of new space should be available in 1988 or 1989.

Laboratory space for three courses are Health Center shared facilities. The Health Center also provides library facilities for the College of Pharmacy and five other colleges. Computer assisted data search systems as well as a large collection of periodicals and reference materials are available. Apart from the library, a computer teaching laboratory is planned.

3. Curriculum

The Bachelor of Science in Pharmacy is a five-year program. The two-year pre-pharmacy portion encompasses 64-66 credit hours and the professional curriculum requires 94 credit hours. Coursework in the pharmaceutical and biomedical sciences is covered in the first and second year of the professional curriculum and the third year is for professional practice courses and clinical clerkship experience. The College operates off-campus clerkship sites in the Florida cities of Jacksonville, Miami, Orlando, St. Petersburg, Tampa, Bradenton, Ft. Myers, and Rockledge. During the ten-week clinical experiential training, the student works on drug therapy monitoring and professional communications.

The Doctor of Pharmacy entry-level degree is a six-year program with two years (64-66 credits) of pre-pharmacy preparation and four years of professional curriculum (131 credit hours). As with the B.S. degree, pharmaceutical and biomedical sciences are emphasized in the first two years of the professional curriculum. The third year includes professional practice courses in the clinical sciences, social sciences, and management. Applied clinical experiential training is offered in the last year of the Pharm.D. program, with eight four-week clinical rotations in various patient care environments designed to develop skills in data analysis, drug therapy monitoring, professional communications, and patient care problem-solving ability. Students may select from among six options to which ten didactic credits and four rotations will be devoted. These options are in community pharmacy,

institutional pharmacy, advanced clinical, research/industry, management, and nuclear pharmacy.

In addition to the B.S. and Pharm.D. degrees, the College offers other undergraduate as well as post-graduate programs. A four-year Bachelor of Science in Pharmacological Sciences is available primarily as a preparatory program for students entering post-graduate study in the pharmaceutical sciences, medical sciences, or professional degree programs in health related disciplines. Graduate programs are offered for the Ph.D. in Pharmaceutical Sciences and the M.S. in Hospital Pharmacy, a program designed to prepare students for administrative positions in institutional pharmacy practice.

4. Enrollment and Degrees

Table 24 shows the relationships between applicants, admissions, and graduates in pharmacy programs for the years 1980 to 1986. Applications have decreased by 51 percent since 1980, so while the applicant:acceptance ratio was 4:1 in

TABLE 24

Pharmacy Graduates
University of Florida
1980 - 1986

Graduating Class	Applicants for the Graduating Class	Admitted Students for the Class	B.S. Graduates	Pharm.D. Graduates	Percent Retention
1980	485	128	117	--	91.4
1981	420	128	122	--	95.3
1982	320	127	99	--	78.0
1983	256	128	109	--	85.2
1984	215	124	96	--	77.4
1985	248	118	88	8	83.3
1986			83	15	
1987			75	25	
1988			25	39	(transition yr.)
1989			28	65	(approx.)
1990			28	69	(approx.)

Note: 1987-90 figures are projected graduates.

Source: College of Pharmacy, University of Florida

1980, it was 2:1 in 1985. In general, the retention rates were higher during those years with greater applicant:acceptance ratios than for those years with lower ratios. In 1986, 15 students were graduated from the entry-level Pharm.D. program. Table 25 displays demographic data on students accepted into the University of Florida College of Pharmacy. In 1985, 103 students were admitted, slightly less than previous average enrollments of 120 students annually, but more than the anticipated 90 students had the B.S. program been eliminated in that year as expected. Of the 103 admitted 75 indicated interest in the Pharm.D. and 28 in the B.S. program. In 1986, 79 percent of the admitted students expressed interest in the Pharm.D. curriculum. About ten percent of the 1985 entering class transferred from out-of-state institutions. For the last several years, the graduation rate has been about 86 percent. Table 26 shows a stable total enrollment level for the College during the past five years.

TABLE 25

Characteristics of Accepted Students 1982-1986
University of Florida College of Pharmacy

	1986	1985	1984	1983	1982
Enrollment	%	%	%	%	%
Male	39.0	45.6	42.5	50.8	41.5
Female	61.0	54.4	57.5	49.2	58.5
Minorities Total	19.0	23.3	30.0	14.2	15.2
Black	N/A	1.9	4.1	1.7	2.4
Hispanic	N/A	12.6	20.0	10.8	7.6
Asian	N/A	7.8	4.1	10.8	5.9
Other	N/A	1.0	1.6	1.7	-
School Transferring from:					
University of Florida	30.0	31.1	40.0	36.7	29.7
Florida 4-year College/University	N/A	20.4	23.3	-	-
Outside Florida 4-yr. College/ University	N/A	9.7	5.8	-	-
Florida Community College	41.0	38.8	29.1	41.7	39.8
Other	N/A	0	1.6	21.7	30.5

Source: College of Pharmacy, University of Florida

TABLE 26

Number of Students Enrolled in University of Florida College of Pharmacy Fall Headcount by Level -- 1981 Through 1985

Year	Unclass	Lower	Upper	Beg Grad	Adv Grad	Total
1981	--	82	302	24	31	439
1982	--	76	275	31	27	409
1983	--	81	282	44	10	417
1984	--	61	294	50	10	415
1985	--	86	288	47	9	430

Source: Student Data Course File, State University System.

5. Minority Access and Retention

Table 27 summarizes minority enrollment at the University of Florida College of Pharmacy from 1982-83 to 1985-86. Total percent of minorities accepted has fluctuated during those four years from a low of 14.2 percent to a high of 29.8 percent, with Hispanic and Asian enrollments showing the greatest degrees of range. Although the number of pharmacy students selected had been stable at about 120, this dropped to 103 in 1985-86; total percent of minorities accepted also declined in this period from a high of 29.8 in 1984-85 to 23.3 percent in 1985-86. Both years were above the national minority enrollment average of 18 percent.

TABLE 27

Enrollment by Minority and Gender University of Florida 1982-1985

Entry Class Year	Number of Applicants	Number Accepted	% Minorities Accepted					% By Gender	
			Total	Black	Hispanic	Asian	Other	Male	Female
1982	248	118	15.2	1.7	7.6	5.9	--	41.5	58.5
1983	256	120	14.2	1.7	10.8	1.7	--	50.8	49.2
1984	265	120	29.8	4.1	20.0	4.1	1.6	42.5	57.5
1985	274	103	23.3	1.9	12.6	7.8	1.0	45.6	54.4

Source: College of Pharmacy, University of Florida

Recruitment activities among minority groups have focused on community college visits to counselors and students, brochure and letter mailings to prospective black students, involvement of black pharmacy students as recruiters, awarding minority scholarships, visits to local high schools, and faculty participation.

For the Fall 1985, of the 103 students admitted, Table 28 shows the breakdown by race and sex.

TABLE 28

Characteristics of Students Admitted in Fall, 1985

	Number	Percentage
Male	47	45.6
Female	56	54.5
Totals	103	100.0%
White	79	76.7
Black	2	1.9
Hispanic	13	12.6
Asian	8	7.8
Other	1	1.0
Totals	103	100.0%

Source: University of Florida College of Pharmacy

For 1985, female enrollment parallels the national average of about 55 percent, and minority enrollments exceed the national average by over five percent.

6. Faculty

The Pharmacy faculty in 1985 was comprised of 43 full-time members. The academic preparations include 25 with Ph.D. degrees, one J.D., two D.P.H., eight M.S. and seven Pharm.D. Faculty ranks are: Professor - 12, Associate Professor - 19, Assistant Professor - 9, and other clinical instructors - 3. Of the 43 faculty members, 65 percent are tenured and 28 are in tenure track positions; seven percent hold non-tenure eligible status. The distribution by race and sex shows that 40 members are white and three are Asian Americans, 38 are males and five are females.

In addition to the 43 full-time faculty, 88 clinical faculty are located at various sites in the state.

B. College of Pharmacy, Florida A & M University

1. Introduction

By legislative enactment, the Division of Pharmacy was established at Florida A & M College and first courses of instruction were offered in 1951. The School of Pharmacy was elected to associate membership in the American Association of Colleges of Pharmacy in 1954, and received a Class "A" accreditation rating in 1956 by the American Association of Colleges of Pharmacy.

In 1972, the School moved into the two million dollar Dyson Pharmacy Building and initiated a long term program designed to increase student enrollment, faculty size, physical facilities and budget. The School of Pharmacy became the College of Pharmacy and Pharmaceutical Sciences in 1982.

Florida A & M University provides for the training of both pharmacy practitioners and of basic and clinical scientists to serve the community at large and to address problems unique to ethic minority populations. The majority of black and U.S. degree-holding Cuban registered pharmacists in Florida are graduates of Florida A & M University.

2. Curriculum

At Florida A & M University, academic programs are offered leading to the Bachelor of Science in Pharmacy, Doctor of Pharmacy (Pharm.D.), Master of Science, and Doctor of Philosophy (Ph.D.) degrees. The School of Pharmacy started its five-year program of instruction in 1957, and established a Master of Science in Pharmaceutical Sciences in 1976. The entry-level (Doctor of Pharmacy) Pharm.D. program was initiated in 1983, and its Ph.D. program was authorized in 1985.

The College of Pharmacy offers the following degree programs:

a. Bachelor of Science - offered in the 0-5 and 2-3 configuration. Students are admitted as first-time-in-College freshmen or from a community college or with another degree.

b. Pharm.D. (First Professional Degree) - offered in the 0-6 or 2-4 configuration. Students select their option for the Pharm.D. degree no later than semester seven of the curriculum.

c. Pharm.D. (Post-baccalaureate Degree) - offered only to graduates of American Council on Pharmaceutical Education accredited schools with a B.S. degree in pharmacy. Offers advanced professional education requiring two calendar years of study.

d. Master of Science in Pharmaceutical Sciences - offers graduate study in the area of pharmacology/toxicology.

e. Ph.D. in Pharmaceutical Sciences - offers advanced graduate study in the areas of pharmacology/toxicology, medicinal chemistry, pharmaceutics, and pharmacy administration.

The College of Pharmacy has operated in the medical center in Miami since 1978. The site consists of approximately 2,000 square feet of laboratory and office space in the Veterans Administration Hospital that is donated to the College by the Hospital. Additionally, the College leases approximately 5,000 square feet of laboratory, research, and office space in the Jackson Towers Building at the Medical Center. This site will house a Basic Sciences and Clinical Research Laboratory that will be developed through a $1 million grant from the National Institute of Health. This laboratory will provide a mechanism for FAMU to contract with various drug companies in Southeast Florida to conduct various stages of drug research.

All clinical clerkship training for both the entry level and post B.S. Pharm.D. program is conducted at the Miami site. Seven full-time faculty conduct training at one of the following hospital affiliates - Veterans Administration Hospital, Jackson Memorial Hospital, University of Miami Hospital and Clinics, Cedars of Lebanon, Family Health Clinic. Additionally, other hospitals and clinics provide clinical sites for undergraduate students. The College reports that the clinical aspect of this program has become a national model for advising the elderly, especially the minority elderly and other medically underserved about their prescription drugs.

3. Enrollment

The student enrollment at the College of Pharmacy has grown from 184 students in 1972 to 347 students in 1986, an increase of 83 percent. Table 29 shows students enrolled in pharmacy programs at Florida A & M University College of Pharmacy.

TABLE 29

Number of Students Enrolled in Florida A & M University, College of Pharmacy Fall Headcount by Level -- 1981 Through 1985

Year	Unclass	Lower	Upper	Beg Grad	Adv Grad	Total
1981	--	109	113	19	--	241
1982	4	149	63	27	--	243
1983	11	91	158	31	--	291
1984	3	123	162	21	--	309
1985	1	138	181	27	--	347

Source: Student Data Course File, State University System.

The 1985 enrollment includes 281 B.S. program students, 19 Pharm.D. program students (First Professional Degree), five Pharm.D. (post-baccalaureate) students and seven Ph.D. students. In 1985, the College of Pharmacy graduated its first seven recipients of the Pharm.D. degree as their first professional degree in pharmacy.

4. Degrees

The pharmacy program at Florida A & M University is one of four (4) such programs at historically black colleges and universities. For the past ten years, the College of Pharmacy has been the leading supplier of black minority B.S. pharmacy practitioners in the country, having graduated approximately 16 percent of the total of the 72 pharmacy schools in the nation.

The College has produced approximately 60 percent of all post-baccalaureate Doctor of Pharmacy black minority graduates. More recently, FAMU became the only College of Pharmacy among the historically black institutions to initiate the Ph.D. degree in Pharmaceutical Sciences. The College reports that, in the United States, since 1975, less than 15 black males and no black females have earned this Ph.D. degree while over two thousand have been awarded to majority and other minority candidates.

Approximately 75 percent of the pharmacy degrees awarded at FAMU between 1975 and 1984 have been earned by minority students. From 1975 through 1984, the FAMU College of Pharmacy graduated 573 B.S. students, 27 post-baccalaureate Pharm.D. students, and 20 Master's degree students. Table 30 shows degrees granted in pharmacy over a five year period at Florida A & M University College of Pharmacy.

TABLE 30

Degrees Granted by Florida A & M University College of Pharmacy 1981-82 Through 1985-86

	B.S.	Pharm.D.	Masters	Ph.D.
1981-82	44	--	8	--
1982-83	24	--	4	--
1983-84	42	2	--	--
1984-85	18	2	2	--
1985-86	34	10	2	--

Source: HEGIS Reports, State University System.

5. Research

Research funding and activity at FAMU's College of Pharmacy now exceeds $11 million in committed funding through 1990. During the last year, the National Institute of Health (NIH), a branch of the U.S. Department of Health and Human Services, awarded the College of Pharmacy $5.3 million under the Research Center at Minority Institutions (RCMI) Program. FAMU's grant was the largest share of any minority institution in the RCMI program. The National Institute of Health also awarded the College of Pharmacy $947,000.00 for research under the Thematic Program to conduct research in the areas of chronopharmacology and anti-inflammatory steriods.

Each summer, from 1985 through 1992, FAMU will contract with 30 college students nationwide to conduct research in the life sciences at the National Aeronautics and Space Administration (NASA). This unique national program is designed to increase the pool of future aerospace scientists. FAMU's strong research activity, particularly in chronophysiology and chronopharmacology, resulted in being designated a "Center of Excellence" by the Board of Regents of the State University System.

C. Southeastern College of Osteopathic Medicine

The Southeastern College of Osteopathic Medicine will establish a school of pharmaceutical sciences on its North Miami Beach campus in 1987. The Southeastern College of Pharmaceutical Sciences (SECOPS), only the second pharmacy school to be established in the last 35 years, was founded to help meet the demand for practicing pharmacists in Florida and to enhance pharmacy education in South Florida. The new pharmacy school will admit a charter class of 50 students in the Fall of 1987. The number will increase to 80 in 1988 and 100 in 1989 and subsequent years. Present plans call for medical and pharmacy students to share SECOM's campus facilities, including the new $5 million building scheduled for completion next year. SECOPS will offer two entry-level degrees in pharmacy: the B.S. degree and the Pharm.D. degree. Tuition and fees will be $6,525.00 for the 1987-88 academic year. The College reports that it will be most interested in applicants who have a desire to practice pharmacy in Florida (especially South Florida), and applicants who have an interest in working in underserved areas.

VI. ISSUES AND RECOMMENDATIONS

A. Analysis of Florida Pharmacy Manpower Needs

Studies of the supply of and demand for pharmacy manpower have produced inconsistent results. The fifth annual Report on the Status of Health Personnel in the U.S., coordinated by the U.S. Bureau of Health Professions, has produced a national perspective on projections of future supply and requirements for pharmacists. As reported, the study estimated a national pharmacist-to-population ratio of 66 per 100,000, and estimated a pharmacist-to-population ratio of 44.7 per 100,000 for Florida.

The 1986 Florida H.R.S. Pharmacists Inventory found a pharmacist-to-population ratio for Florida of 63.8. These data are more recent and are perhaps a more accurate assessment of Florida manpower. The survey represents a random selection of one-half of pharmacists holding valid Florida licenses. Although the inventory is simply a snapshot of pharmacy supply and not a supply-demand manpower analysis, the H.R.S. report provides valuable data on the current condition of the pharmacy profession in Florida.

The University of Florida College of Pharmacy, using existing manpower data, calculated that, assuming a steady increase in population and a 20 percent constant for numbers of inactive pharmacists, the identified annual increase in numbers of licensed pharmacists will continue to raise the pharmacist-to-population ratio in the State. The College also projected that, given the continuation of current trends, a small future decrease in the number of graduates due to an increase in degree requirements would make no significant difference in the pharmacist-to-population ratio. Furthermore, the Dean of the College has testified that despite apparent shortage of pharmacists in the State, there is no evidence of a lack of pharmaceutical services. The Executive Director of the Florida Pharmacy Association also concurred in that statement.

The 1986 study undertaken by the National Association of Chain Drug Stores, Inc. concludes that there is a shortage of pharmacists at present and the shortage may well become more severe in the future, especially for community pharmacies. It also urges educational policymakers to be cautious in making policy based on inconclusive data.

While the existing data do not indicate conclusively a shortage of pharmacy manpower, the Commission has received substantial testimony from retail and hospital pharmacies of the difficulty of filling vacant pharmacist positions. While student access to pharmacy education in Florida is being provided by the two colleges of pharmacy, there is increasing competition in the State for graduates of the two colleges. Observers of the retail industry have indicated that Florida is overstored in some of its highly contested markets and that it will be several years before the population growth will catch up with the furious pace of retail development.

In Florida, the demand for pharmacists continues to be filled primarily by out-of-state pharmacists. The State Board of Pharmacy reports that more than three-fourths of the pharmacists being licensed annually are from

out-of-state. The opening of SECOM's College of Pharmacy in 1987 will provide the State an additional supply of pharmacists. The College plans to enroll initially 50 students and plans to increase its enrollment to 100 students by 1989. The extent to which the additional supply of pharmacists affects the manpower needs of southeast Florida and the total needs of the State will need to the be monitored by the H.R.S. office of Comprehensive Health Planning and the Board of Regents.

In conclusion, the Commission finds that Florida has a ratio of pharmacists-to-population close to the national average. However, the retail and hospital pharmacies report current shortages and the growth of the population and the demographic patterns in Florida suggest a preferred pharmacist-to-population ratio greater than other states. Furthermore, the current shortage may well be exacerbated in the future. Analyses have predicted shortfalls of as high as several hundred pharmacists per year through the year 2000.

The supply of pharmacists in Florida will be increased with the onset of the new independent pharmacy school in Southeast Florida. Eventual class size of 100 students will increase Florida graduate supply by approximately 70 percent. Assuming that Florida continues to attract pharmacists from other states and given the lack of certainty about the degree of the predicted shortages and the onset of a significant new supply source, the Commission does not find need to increase the enrollment levels at the state university pharmacy schools. Conversely, in the face of possibly severe shortages, the Commission also finds it important that the State not allow any reduction in current enrollment levels.

1. Enrollment should not be reduced in the two State colleges of pharmacy.

The Board of Regents program review discussed the issue of manpower shortages in light of the consultant's proposal to move the two schools' programs to an all Pharm.D. curriculum. Testimony was received that such a move would exacerbate the already existing shortage of pharmacists in Florida. The Commission's review of the manpower issue has determined that moving to an all Pharm.D. curriculum would have only a slight or a negligible impact on the availability of pharmacists in Florida as long as current enrollment levels are maintained. In some other states, enrollments have declined as schools have moved to an all Pharm.D. curriculum but in Florida the applicant pool is sufficiently strong to maintain enrollment. A short-term impact would be felt as the first all Pharm.D. class continues into its sixth year and produces no graduates for that one year. This temporary decline in production, however, would constitute a negligible impact in a state where three-fourths of the supply comes from out-of-state.

B. Degree Options for Entry to Pharmacy Practice

Currently, there are two educational paths for entry to pharmacy practice in the United States: one culminates in the awarding of a five-year first professional degree, the other in the awarding of a six-year first

professional degree. As has been the case in a number of other health profession areas such as nursing and physical therapy, an original single educational route has been supplemented in recent years by a more advanced one in the face of an increasing sophistication of health care practice and of an expanding knowledge base. The existence of alternate routes has engendered confusion for students and the public-at-large, concern for remaining competitive on the part of professionals who hold the less advanced degree, concern for degree inflation by educational policy makers, and concern by employers that the advanced degree might raise labor costs.

The bachelor's of science degree is the degree held by the vast majority of practicing pharmacists and is the degree most commonly conferred in pharmacy schools. In 1984, 93 percent of the degrees conferred were baccalaureate degrees. It is a three-year professional curriculum preceded by two years of pre-pharmacy and general education coursework. The first two years of the baccalaureate curriculum is comprised of pharmaceutical and biomedical sciences, while the third year is devoted to professional practice courses and, usually, a ten-week clinical clerkship experience. Successful completion of this degree program and a 1500 hour internship program administered by the Florida Board of Pharmacy makes a student eligible to take the pharmacy licensing examination.

More recently, another approach to the provision of pharmacy services has come into general discussion and has been referred to as "clinical pharmacy." It is increasingly clear that pharmacists have an enhanced role to play in the provision of health-care services by becoming more oriented toward patient care and by being a primary source of information on drugs to other health care providers as well as patients. The broader, patient-oriented roles include patient counseling, drug therapy follow-up, pharmcokinetics, consultation, providing drug information, and prescribing. In addition to dispensing prescription medication, an increasing activity for pharmacists has been their preventive health role in counseling patients about self-care and the use of nonprescription drugs and medications. Another factor involved in the rise of clinical pharmacy is that the employment settings of pharmacists has shifted significantly in the last two decades. More than one-third of all pharmacists are now employed in hospitals, nursing homes, government agencies, educational institutions, or manufacturing industries. These locales often call for more sophisticated knowledge of pharmacy than the traditional community pharmacy setting and provide opportunities for more patient-oriented pharmaceutical services.

Responding to the changes in the profession, a second entry-level degree has been developed, the Doctor of Pharmacy, or the Pharm.D. as it is generally termed. In 1979, the profession established "Standards of Practice for the Profession of Pharmacy" recognizing the new and emerging role of pharmacists and setting forth specific tasks and responsibilities.

The curriculum is completed over four professional study years following two years of pre-pharmacy preparation. The first two years of the professional curriculum emphasize the pharmaceutical and biomedical sciences. The third year builds on these basic sciences, adding professional practice courses in the clinical sciences, social sciences, and management. The fourth year of the program is devoted to applied clinical experiential training. In the

latter, each student competes a diversity of clinical rotations in patient care environments. It is the fourth year of clinical training that is in the main, distinguishes the Pharm.D. from the baccalaureate entry-level program. Upon successful completion of the Doctor of Pharmacy degree program and completion of a 1500 hour internship program supervised by the Florida Board of Pharmacy, a student becomes eligible for the pharmacy licensing examination.

In 1987, among the seventy-three colleges of pharmacy in the U.S., thirty-one will offer the B.S. degree only, ten colleges will offer the B.S., the entry-level and post B.S. Pharm.D. degrees, and eight colleges will offer the entry-level Pharm.D. degree only.

The two Florida colleges of pharmacy offer both the B.S. and the Pharm.D. degree. In the 1986 BOR program review of pharmacy education, the outside consultants recommended that the State University System offer only one entry-level degree (1) for economic reasons (the review stated that there are inefficiencies in operating two programs concurrently); (2) to better manage the curriculum (the consultants stated that two degree programs result in confusion for the student and for faculty in their role as advisors to students); and (3) to assure uniform standards of competency for practice. The consultants concluded that the Pharm.D. degree should be the sole degree offered for the following reasons:

(1) Level of clinical training: a major consideration is the essential nature of clinical experiential training of the pharmacist. It is evident that the limited time available for such training in the B.S. curriculum is insufficient to prepare the basic pharmacist to perform the tasks well and to fully accept the responsibilities outlined in the Standards of Practice. It also is not possible in the five-year B.S. professional curriculum to give the student all of the basic professional courses necessary to support an elective program that will allow the selection of a variety of different options. Both of these goals can be accomplished in the six-year Pharm.D. professional curriculum.

(2) Professional competition: Another major consideration is the clear national movement toward the entry-level Pharm.D. and the impact this can have on students. Each year the percent of pharmacy students enrolled in Pharm.D. programs grows, and the number of colleges offering this program, or planning to offer it increases. The graduates of B.S. pharmacy programs are normally expected to be in practice for as long as 40 years. By mid-career, if the Pharm.D. movement continues, those B.S. graduates will be competing for positions with Pharm.D. graduates. The lack of advanced knowledge and increased skills gained in Pharm.D. programs places the successful competition of B.S. graduates at risk. In addition, it must be recognized that the growing trend toward providing

increased drug therapy decision-making responsibilities and other clinically important roles will require that practitioners of the future have the ability to learn and practice in these new roles or become obsolete.

(3) Depth of Study: While continuing education can be valuable in acquiring knowledge, improving skills, and learning new techniques, it can only be effective if built upon a solid base; the Pharm.D. program can provide that base. Dealing with drug interactions, for example, requires more extensive knowledge of pharmcokinetics and drug metabolism than can usually be included in the B.S. curriculum. The pharmacist who is well-educated in these areas and who also has clinical experience can contribute greatly to problems such as the optimization of therapy with dangerous drugs for particular patients, or dealing with patients with drug-related problems. It is known that the over 65 age group use drugs at a rate three-times that of the rest of the population, and it is well-known that they often metabolize drugs at different rates and react differently to certain drugs than younger patients. With the high proportion of the elderly in Florida, it is especially important that the pharmacist be capable of dealing with the drug therapy problems of this special population. The Pharm.D. degree assures the level of background required for the delivery of this and other kinds of quality pharmaceutical care.

(4) New Practicing Requirements: Another example of the growing role for pharmacists in Florida is a statute, effective October 1, 1985, which allows pharmacists to prescribed certain legend drugs. The allowed drugs include many which are in over-the-counter products (usually in lower strength) or which have been approved by an FDA advisory committee for transfer to over-the-counter status. The pharmacist's role as a health care consultant will be greatly increased by this new responsibility, and clinical training is essential to fulfilling this role. It is clear that the Pharm.D. curriculum will prepare pharmacists in greater depth for this counseling.

At the January 1986 Board of Regents meeting, the Board made the following recommendation:

Maintain the B.S. in Pharmacy and the Pharm.D. entry-level degrees at UF and FAMU until the results of the PEPC study based on current supply/demand information in the Pharmacy profession are known. The PEPC study is scheduled for completion March 1, 1987. At the July 1987 meeting of the Board of Regents Program Committee, the Colleges of Pharmacy

> at UF and FAMU will submit plans to phase out the B.S. in Pharmacy entry-level degree and implement the Pharm.D. as the sole entry-level degree.

The imposition of the Pharm.D. degree as the sole entry-level degree has been the focus of considerable debate at the national level as well as within Florida. Opposition has come, in particular, from the chain drug companies who argue that the B.S. degree provides adequate preparation for the type of practice most commonly pursued by today's pharmacy graduates. In Florida, 38.4 percent of all pharmacists work in chain pharmacies. Altogether, 67.7 percent of Florida's licensed pharmacists work in independent or chain pharmacies. The additional clinical skills taught in the Pharm.D. curriculum have been most commonly utilized by pharmacists in clinical settings, although there is a trend toward the expansion of clinical pharmacy services to community settings. At present, only 4.3 percent of pharmacists in Florida hold the Pharm.D. degree.

The increased demands placed on practicing pharmacists because of the changes in pharmaceutical services has also led to increased interest in the external Pharm.D. This degree program allows practicing pharmacists to obtain advanced clinical and didactic training. In the 1986 Board of Regents pharmacy program review, the Board recognized the need and directed both public colleges to prepare proposals to address the needs of practicing pharmacists:

> FAMU and UF each shall develop methods, such as external degree program proposals for Board of Regents consideration, through which practicing pharmacists throughout the State can obtain whatever didactic and clinical training they desire to maintain professional competencies and competitiveness.

The two schools have submitted initial proposals to the Board which are presently being reviewed and refined. SECOM has also announced plans to offer the external Pharm.D. to practicing pharmacists in the southeast Florida area.

The Commission has received testimony on the increasing complexity of the pharmacy profession, the development of patient-oriented pharmaceutical services, and the expansion of clinical roles of pharmacists in the total delivery of health care. The trend toward the six-year doctor of pharmacy degree has been heightened by increased curricular requirements designed to address expanded professional standards of practice. While general consensus holds that the practice of pharmacy is in a state of significant, if not profound, transition, it is unclear exactly how the profession is changing, when it will stabilize, and exactly what the ramifications for professional training will be.

Testimony received by the Commission has failed to provide justification for the elimination of the five-year baccalaureate degree track in the State

colleges of pharmacy. The expansion of pharmacy services in Florida combined with the State's population growth have produced a shortage of pharmacists. Industry representatives have testified that there are different demands and needs in a traditional community pharmacy as compared to institutional pharmacy practice and that these differences should be reflected in pharmacy education. In the chain drug store industry, there is no differentiation for the two entry-level degrees in terms of job description, salary or position. There continues to be industry demand for baccalaureate graduates and these pharmacists remain in high demand in the Florida marketplace. Industry representatives argue that the implementation of an exclusive six-year pharmacy curriculum will reduce the number of new pharmacists and exacerbate the existing manpower shortage in the State.

It is unclear what the fiscal impact of offering two degrees is. Neither institution was able to provide the Commission with data on the costs of offering both degrees versus just offering the one. However, the Dean of the University of Florida College did testify that a recent accreditation review at the college may have identified some special costs. If this proves to be the case, the Board of Regents and the University of Florida should take such additional information into consideration in reviewing the college of pharmacy budget needs.

Chain pharmacy representatives have also testified that some pharmacists experience high levels of frustration due to over-education for the role that they perform in the employment setting causing low morale and high turnover. As reported, the 1986 Pharmacy Inventory revealed high turnover in all regions of the State. For small operations, turnover ranged from a low of 14.43 percent in Northeast Florida to a high of 20.90 percent in Southeast Florida.

Additionally, the cost of a mandated additional year of pharmacy education could increase costs to the State, and would substantially increase education costs to students which may be of particular concern to low and middle income students.

2. The Board of Regents should maintain both the five-year baccalaureate and the six-year doctor of pharmacy degree programs in the State colleges of pharmacy.

A number of national professional reports, while supporting the movement toward an exclusive doctor of pharmacy degree program, have recommended a phase-in of the curriculum over a period of years. In 1984, the American Pharmaceutical Association issued a Report of the Task Force on Pharmacy Education. The report recommended that a six-year doctor of pharmacy program evolve as the desired goal with the intent that it become the sole entry-level degree for practice. The report, however, also recommended cost, feasibility and planning studies for all AACP member colleges who desire to offer the all-Pharm.D. degree program. Additionally, the Task Force recommended that the APA commission an analytical study, to be completed by 1990, of the comparative level, quality, effectiveness and utility of pharmaceutical services currently provided by five-year B.S. degree and six-year Pharm.D. degree pharmacists, with special attention to community pharmacy practice. The report also urged the American Council on Pharmaceutical Education to

prepare standards for six-year entry-level Pharm.D. degree programs by 1990 that would be binding on these programs by 1996. In 1986, a professional leadership conference hosted by the National Association of Boards of Pharmacy endorsed the all-Pharm.D. curriculum as preparation to practice to be accomplished within a five-year framework.

3. During its next pharmacy program review, the Board of Regents should reassess pharmacy practice needs and State manpower needs in order to consider if the State colleges of pharmacy should continue to offer the five-year baccalaureate degree as preparation for entry-to-practice.

The Commission has found no unanimity of opinion on this issue among educators, industry representatives and the profession. The Florida Pharmacy Association's House of Delegates opposed a resolution to support an exclusive Pharm.D. curriculum. Accordingly, the Florida Board of Pharmacy supports the continuation of both degree programs at this time. The Board is statutorily charged with assuring that program graduates are able to provide quality care, and it continues to license both B.S. and Pharm.D. graduates to practice in Florida. While seeing a trend toward an exclusive Pharm.D. curriculum at the national level, the American Council on Pharmaceutical Education has indicated that both degree programs currently provide adequate preparation for licensure to practice. In 1985, a vote by the American Association of Colleges of Pharmacy House of Delegates failed to endorse a proposal to move toward an exclusive Pharm.D. curriculum. The two State colleges of pharmacy have recommended an exclusive doctor of pharmacy degree program for their colleges, while the new private college of pharmacy in the State (SECOPS) will be offering both degree tracks to their students. The Florida chain pharmacy representatives oppose an exclusive Pharm.D. degree program. The Florida Society of Hospital Pharmacists support the movement to an all-Pharm.D. curriculum.

The Postsecondary Education Planning Commission and the Board of Regents have both supported state-level initiatives designed to facilitate postsecondary education/industry linkages. In other areas, such cooperation has led to the development of on-the-job training opportunities and internships that assist in the development of well-trained graduates for the State's workforce. Education/industry partnerships have resulted in scholarship and fellowship programs and other sources of financial assistance for students. The Commission feels that it is essential that the public and private colleges of pharmacy, industry representatives and the pharmacy profession begin to work closer together in Florida to assure quality graduates and quality health care.

4. Prior to the next BOR pharmacy program review, the Office of the Vice Chancellor for Health Affairs should convene a Task Force on Pharmacy Education in Florida and invite representatives of the public and private colleges of pharmacy, the Postsecondary Education Planning Commission, the Florida independent, chain and hospital pharmacy industries, and the Board of Pharmacy to address pharmacy education issues as they relate to professional pharmacy practice and manpower needs in Florida. Included in the Task Force

deliberations should be a cost analysis of the professional degree programs, including a comparison of the costs of offering both degree tracks versus the Pharm.D. only curriculum.

C. Access for Students to Pharmacy Education in Southeast Florida

Florida A & M University College of Pharmacy has been offering clinical instruction in the Miami area for a number of years, primarily because the Tallahassee area offers few adequate clinical sites. All Pharm.D. students and some of the B.S. students spend all or part of their final year in Miami. By January 1987, plans call for 25 FAMU students to be in Miami at one time. FAMU has four full-time faculty in Miami and utilizes facilities at the V.A. Hospitals and has additional floor space at the adjacent Jackson Towers. The National Institutes of Health have provided funds of $1 million for research infrastructure needs for FAMU in Miami.

FAMU has an affiliation with the University of Miami medical school and four FAMU faculty have joint appointments. Ten percent of FAMU pharmacy students go on to medical school and a number of the University of Miami minority medical students started in the FAMU program.

The University of Florida also operates clinical teaching sites in Miami at Jackson Memorial Hospital and at Mt. Sinai Hospital. Approximately 52 percent of the College's clerkship training is conducted away from the Gainesville U.F. Health Center campus and approximately 25 percent of their pharmacy students come from southeast Florida. Since 1980, the University of Florida has had a formal affiliation with Jackson Memorial Hospital's Pharmacy Service with a capacity for 12 students per year to take the 10-week B.S. clerkship and six FTE Pharm.D. students to take the full clinical clerkship there. The affiliation with Mount Sinai Hospital in Miami Beach has a current capacity for three FTE Pharm.D. students with expectations of growth to six FTE by 1987. Sites are also being developed in Broward and Palm Beach counties. The University of Florida has no full-time faculty in Miami. Adjunct professors are employed to supervise the clinical clerkships.

The 1986 Board of Regents pharmacy program review recognized the role of FAMU in addressing the health care needs in the Miami area and made the following recommendations:

> The Board of Regents invites Florida A & M University to explore the feasibility of an appropriate center for providing instruction in pharmaceutical sciences in the Miami area. The proposal should build upon the strengths of the existing relationships between Florida A & M University, the University of Miami, Jackson Memorial Hospital, and the Veteran's Administration Hospital. The proposal should recognize and provide for the continuation and coordination of pharmacy instruction in Southeast Florida by the University of Florida.

The two public colleges of pharmacy are located in the northern section of the State at considerable distance from the more densely populated areas of southern Florida. The Southeastern College of Osteopathic Medicine, which has

announced plans to open an independent college of pharmacy in North Miami Beach in the Fall of 1987, will provide geographic access to interested students in the southeastern part of the State. The initial first-year class will be 50 students and plans call for the class to increase to 100 students in 1989. Access may be limited for students of modest financial resources, however, due to the high tuition rates charged by independent schools.

5. Given Florida A & M University's traditional mission of serving low-income students and its current presence in Miami, the Board of Regents should consider expanding the University's presence, in cooperation with the University of Florida, to provide residents the opportunity to pursue the professional pharmacy degree acquiring the majority of their instruction without leaving the Miami area.

6. Because pharmacy has proven to be an excellent preparation for medical school and because of the extreme shortage of minority physicians in Florida, the University of Miami and Florida A & M University are encouraged to develop further the pharmacy-to-M.D. curriculum.

D. Minority Access to Pharmacy Education

In the late sixties and early seventies, substantial progress was made in increasing the absolute numbers and percentages of minorities attending postsecondary education. The percentage of minority enrollment reached a peak in the mid-seventies and has been declining or showing only slight gains since then.

Minority access to pharmacy education is influenced by a variety of significant factors, including a limited pool of qualified minority students to draw from, severe competition for these individuals among professional schools, the lack of minority faculty and administrative role models in higher education in general and the pharmacy profession in particular, and the financial constraints accompanying the lower socioeconomic backgrounds of many minority students.

In 1983, the Association of Minority Health Professions Schools issued a report on the status of health professions education for minorities. The following is a selected list of the issues and options presented in the report pertinent to the Committee's deliberations.

- While there may be an emerging surplus of health manpower in many fields, there is no surplus of black health manpower, and wide disparities will continue between the ratio of black manpower to black population and white manpower to white population.

- Since the federal and state governments bear much of the cost of health care, they must be concerned about access to care and health status, since improved health status should translate into lower health and social expenditures.

- An increase in the proportion of black health professionals is dependent on a number of factors:
  - a commitment on the part of predominantly white health professional education institutions,
  - admissions and retention policies,
  - improved high school and college science training for black students, and
  - affordable student financing.
- Only a very small proportion of predominantly white health professions schools are responsible for increases in black student enrollment. Strategies to broaden this base include:
  - strong commitment by governors, state legislators, and state higher education boards to ensure that state universities implement policies to increase minority enrollment,
  - increased scholarships and low interest loans to minority students,
  - a more aggressive federal policy of employment of civil rights and affirmative action programs, and
  - training of more minority faculty and minority faculty development.
- Cutbacks in enrollment threaten to reduce total black enrollment and black health professions manpower.

The report concluded that there is a substantial probability that previous gains in the increase of black participation in the health professions will be eroded during the eighties unless action is taken to increase minority student financial support through scholarships and low interest loans, and to increase the commitment of predominantly white schools to recruit and retain black students, even if the schools reduce general enrollment.

Nationally, participation among women and minorities in pharmacy education has produced distinctive patterns. While there has been a tremendous increase in the number and percentage of female pharmacists, enrollments among blacks and Hispanics over the last six years show generally slowing rates. As reported, black enrollments have increased but at a declining rate, while Hispanic enrollments have decreased. Contrarily, enrollments among Asian Americans have fluctuated yearly but have shown an overall increase since 1980.

Responding to Florida's commitment to full access to education and employment opportunities for all citizens, the two public colleges of pharmacy have

committed staff, facilities and funding to develop strategies to recruit and retain minority students in pharmacy education. Florida A & M University and the University of Florida actively recruit qualified minority students for their pharmacy schools, seek to provide equal opportunity for all students through their admission procedures and provide financial aid as needed.

Florida A & M University College of Pharmacy has achieved national prominence in terms of supplying minority health personnel manpower. The pharmacy program is one of four such programs at historically black institutions. For the past ten years, FAMU has been the leading producer of black minority B.S. pharmacy practitioners. Additionally, the College has produced approximately 60 percent of all post-baccalaureate Doctor of Pharmacy black minority graduates.

The College has operated a branch campus and clinical training site in Miami since 1978. The College's presence has addressed the health care needs of minorities in south Florida and provided student access to pharmacy education in that area. The State is fortunate to have a college of pharmacy in a historically black institution that provides access to pharmacy education for minority citizens, that has been successful in alleviating the severe underrepresentation of minority pharmacists nationwide, and that produces quality minority pharmacists to work in Florida.

The University of Florida College of Pharmacy actively recruits qualified minority students to its pharmacy programs. Recruitment activities have focused on extensive coverage of the State's community colleges including visits to counselors and students, brochure and letter mailings to prospective minority pharmacy students, the involvement of minority pharmacy students and practitioners to serve as role models, and visits to area high schools. College faculty participate in most of these activities. Additionally, the College awards up to $10,000 in minority scholarships annually.

The College's minority enrollment is affected by the presence in the State of FAMU's College of Pharmacy, by the high cost of professional education, and by the increasing interest of qualified minority applicants in other professional schools. Despite these realities, the minority enrollment of the College has consistently exceeded the national average for colleges of pharmacy.

The Commission has received testimony from the colleges of pharmacy concerning barriers to minority participation. Despite an increasing variety of recruitment strategies, minority enrollments have stabilized. The colleges have reported that financial aid is available for minority students from federal programs, institutional sources, and college scholarship programs. Though all evidence seems to indicate that there are sufficient resources to meet the financial aid needs of minority students, it is not clear that minority students have this information at the time that they are making critical career choices. It is important that minority students receive accurate and timely information about pharmacy as a career choice and about the availability of financial assistance.

7. The CHOICES system maintained by the Center for Career Development Services should continue to include information about pharmacy education opportunities in Florida and the availability of financial aid and job opportunities for minorities who desire to enter pharmacy.

8. Activities undertaken by the colleges of pharmacy to reach out to minority and disadvantaged high school and community college students should include information on financial aid and on career opportunities available in pharmacy.

VII. CONCLUSION

The citizens of the State of Florida are being well-served in regards to access to and quality of pharmacy education in the State through the two public colleges of pharmacy at Florida A & M University and at the University of Florida. Additionally, the new Southeastern College of Pharmaceutical Sciences will eventually increase pharmacy manpower in Florida as well as provide geographic access to residents in the southeastern part of the State.

The increasing complexity of the pharmacy profession has resulted in increased curricular requirements designed to address expanded professional standards of practice and has heightened the trend toward the six-year doctor of pharmacy degree. Following a review of pharmacy practice needs and manpower needs in Florida, however, the Commission recommends that the Board of Regents maintain both the baccalaureate and doctor of pharmacy degree programs in the State colleges of pharmacy. Based on a reported shortage of pharmacists in Florida, the Commission finds it important that the State not allow any reduction in enrollment levels and urges the State colleges to maintain their current enrollment.

The Commission emphasizes the need for a coordinated planning process for pharmacy education in Southeast Florida and supports the initiative of Florida A & M University, in cooperation with the University of Florida, to provide pharmacy training opportunities for the residents of this region. The Commission recognizes the impact that has been made, both nationally and regionally, by Florida A & M University in producing minority pharmacists.

APPENDIX A

1986 PHARMACIST INVENTORY

1986 PHARMACIST INVENTORY

This questionnaire has been developed jointly by the Florida Board of Pharmacy and the Office of Health Planning and Development, Department of Health and Rehabilitative Services in consultation with the two Colleges of Pharmacy, the Board of Regents, and the Department of Education. This information will be used to update the Florida pharmacists data base and to address issues of current concern to your profession and the State. Please print your responses in the blocks provided, taking special care to record accurately your license number. Please return this form with your renewal notice and fee. Thank you in advance for your help.

1. FLORIDA LICENSE NUMBER: [ ][ ][ ][ ][ ][ ][ ]
2. BUSINESS LOCATION: COUNTY _____
   POSTAL ZIP CODE [ ][ ][ ][ ][ ]
3. PHARMACIST'S LAST NAME: _____
4. Sex: [ ]
   1. Male
   2. Female
5. Race: [ ]
   1. White (Caucasian)
   2. Black (African Orig.)
   3. American Indian
   4. Oriental, Pacific Islander
   5. Other
6. Are you of Hispanic origin?
   1. Yes 2. No [ ]
7. Are you a citizen of the United States?
   1. Yes, native born
   2. Yes, naturalized
   3. No
   [ ]
8. Year of Birth: [ ][ ][ ][ ]
9. Please indicate all degrees or formal advanced training in pharmacy which you have received by entering the year(s) each was received:

B.S. Pharmacy	[ ][ ][ ][ ] 10	Master of Science	[ ][ ][ ][ ] 15
Pharm. D.	[ ][ ][ ][ ] 11	Phd. or D.Sc.	[ ][ ][ ][ ] 16
Residency in Hospital Pharmacy	[ ][ ][ ][ ] 12	Post Doc. Fellowship	[ ][ ][ ][ ] 17
Residency in Clinical Pharmacy	[ ][ ][ ][ ] 13	Other	[ ][ ][ ][ ] 18
Post B.S. Pharm. D.	[ ][ ][ ][ ] 14		

10. Did you receive your first pharmacy degree in Florida?
    1. Yes 2. No [ ] 19
11. If you received an advanced degree please enter the number of the major area.
    1. Pharmacy
    2. Hospital Pharmacy
    3. Clinical Pharmacy
    4. Pharmacognosy
    5. Pharmacology
    6. Pharmacy Administration
    7. Pharmaceutical (Medicinal) Chemistry
    8. Other
    [ ] 20
12. Are you certified by the Board of Pharmacy as a consultant pharmacist in Florida?
    1. Yes 2. No [ ] 21
13. Which of the following best describes your current status?
    1. Currently active in pharmacy
    2. Retired
    3. Active in another field
    4. In training in pharmacy
    5. In training in another field
    6. Other
    [ ] 22

IF YOU ARE NOT CURRENTLY ACTIVE, GO TO QUESTION 24.

14. How many years have you been active in this profession? [ ][ ] 23
15. Is Florida the primary state in which you practice?
    1. Yes 2. No [ ] 24
16. How many years have you practiced in Florida? [ ][ ] 25
17. On average, how many weeks per year do you practice in Florida?
    Weeks Full-Time [ ][ ] 26 Weeks Part Time [ ][ ] 27

18. Which item below best describes your employment status?

1. Sole Owner-Manager
2. Partner
3. Manager (Director, Chief, etc.)
4. Assistant Manager (Asst. Chief, Asst. Director, etc.)
5. Staff Pharmacist
6. Unpaid Worker (volunteer)
7. Other
8. Sales (Other than Retail)

☐ 28

19. In an average week, how many hours are spent in pharmacy practice or pharmacy related work in each of the following employment settings?

1. Independent Community Pharmacy	☐☐	29
2. Chain Pharmacy	☐☐	30
3. Hospital	☐☐	31
4. Nursing Home	☐☐	32
5. Freestanding Clinic	☐☐	33
6. Group Health Plan Facility (HMO, etc)	☐☐	34
7. Government Health Facility (VA, Military)	☐☐	35
8. Administrative/Regulatory Agencies	☐☐	36
9. Pharmaceutical Manufacturer	☐☐	37
10. Pharmaceutical Wholesaler	☐☐	38
11. College of Pharmacy	☐☐	39
12. Other College or University	☐☐	40
13. Other	☐☐	41
14. Total Hours	☐☐	42

20. Did you have a formal arrangement as a pharmacy consultant with a health care facility in 1984? Do you currently have such an arrangement?

1. Yes 2. No 1984 ☐ 43 1986 ☐ 44

21. Do you have adequate access to continuing education in pharmacy?

1. Yes 2. No. ☐ 45

22. How would you describe the quality of the continuing education courses which you have attended within the last year?

1. Excellent
2. Very good
3. Good
4. Fair
5. Poor

☐ 46

23. How would you evaluate the supply of pharmacists in your area?

1. Less than adequate
2. Adequate
3. More than adequate
4. Excessive

☐ 47

INACTIVE PHARMACISTS ONLY

24. What was the last year that you were active in this profession? ☐☐☐☐ 48

25. If you are a Florida resident who is not currently practicing pharmacy, when do you anticipate returning to practice?

1. Never
2. Within the next year
3. Within 3 years
4. More than 3 years from now

☐ 49

26. If you are currently residing outside of Florida, when do you intend to return to practice in Florida?

1. Never
2. Within the next year
3. Within 3 years
4. More than 3 years from now

☐ 50

27. If you are planning to return to practice, in which county do you plan to work? _____ 51 ☐☐

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APPENDIX B

1986 PHARMACY QUESTIONNAIRE

1986 PHARMACY QUESTIONNAIRE

This questionnaire has been developed jointly by the Florida Board of Pharmacy and the Office of Health Planning and Development, Department of Health and Rehabilitative Services in consultation with the two Colleges of Pharmacy, and the Post-Secondary Education Planning Commission. This information will be used to measure the demand for pharmacists and to address issues of current concern to your industry and the State. Please print your responses in the blocks provided. Thank you in advance for your help.

1. Business Location: County_____

   If multi-county firm, enter principal county based upon sales.

2. Indicate the number of permits for which this response is being made. [ ]

3. Which of the following best describes the person completing this questionnaire ? [ ]

   1. Sole Owner
   2. Partner or Shareholder
   3. Staff Pharmacist
   4. Store Manager
   5. Corporate Representative or Chain Manager
   6. Other

4. Which of the following best describes your firm ? [ ]

   1. Independent Pharmacy
   2. HMO-Based Pharmacy
   3. Nursing Home-Based Pharmacy
   4. Hospital-Based Pharmacy
   5. Chain (Less Than 10 units)
   6. Chain 10-50 units
   7. Chain (Greater Than 50 units)
   8. Other

5. How many pharmacists do you presently employ? Indicate the numbers of persons by race and sex below.

   White Males [ ] Black Males [ ]
   White Females [ ] Black Females [ ]

6. How many pharmacist positions do you have allocated at your firm? [ ]

7. Based upon current projections how many new pharmacists do you expect to employ by:

   1987 [ ] 1989 [ ] 1991 [ ]

8. How many pharmacists left your firm in the last year? [ ]

9. Does your firm prefer to hire at the B.S. Pharmacy or Pharm. D. level?

   1. B.S. Pharmacy 2. Pharm. D. 3. No preference [ ]

10. In the last two years how many of each have you hired?

    B.S. Pharmacy [ ] Pharm. D. [ ]

11. Enter the approximate starting salary which your firm will pay for a new graduate with the following degrees.

    B.S. Pharmacy [ ] M.S. Pharmacy [ ]
    Pharm. D. [ ] Phd. or D.Sc. [ ]

12. Is the number of pharmacies in your county :

    1. About Right 2. Excessive 3. Too Few [ ]

13. Is the number of pharmacists in your county :

    1. About Right 2. Excessive 3. Too Few [ ]

14. Which of the following best describes your firm's annual sales ? [ ]

    1. Under $200,000
    2. $200,000 - $999,999
    3. $1 - 2 Million
    4. $2 - 10 Million
    5. $10 - 50 Million
    6. Over $50 Million

15. Indicate the approximate percent of your firm's annual sales which is derived from pharmaceuticals. [ ]

The following 24 statements refer to the employment functions of your firm's pharmacists. Enter the appropriate number for your response to each statement in the box provided.

I expect pharmacists whom I employ or supervise to perform the following functions:

1 - Daily 2 - Weekly 3 - Occasionally 4 - Never

1. Establish and/or implement written policy and procedures for pharmacy operation.
2. Initiate a formulary system to meet the needs of patients and practitioners.
3. Establish and monitor a system to insure proper storage conditions for perishable pharmacy items and removal of out-dated items.
4. Negotiate with vendors regarding specifications, cost, delivery schedules, etc.
5. Establish, administer, and interpret personnel policies procedures.
6. Verify prescription orders for completeness and legality, including dosage, route, frequency, duration, and interactions.
7. Check final product for labeling and product accuracy prior to dispensing.
8. Select the manufacturing source of generic drug(s)/product(s) to be dispensed.
9. Obtain information for entry into patient record and assess and evaluate the prescription and patient information to determine appropriate course of action (e.g., timing of dosage schedule, advising patient of possible adverse effects).
10. Provide patient consultation regarding medication dosage, dosage frequency, and method of administration.
11. Advise patient of potential drug-related or health-related conditions which may develop from the use of medication.
12. Consult with patient to properly identify symptoms in order to advise for self-medication.
13. Refer patient to other health care providers and/or health resources when indicated.
14. Regularly evaluate and monitor therapeutic response of patient to prescribed medication, record evidence of monitoring in appropriate record, and recommend therapeutic regimen modifications where necessary.
15. Upon request, review and interpret medication history to the physician, patient, or other persons involved with the patient's care.
16. Make recommendations regarding drug therapy to the physician, patient, or other persons involved with the patient's care.
17. Monitor the patient's record for indications of drug abuse or misuse of prescription medications.
18. Advise patients on personal health matters (e.g., smoking, drug abuse, etc.) or use of medicinal or surgical appliances (e.g., inhalers, colostomy bags, trusses).
19. Develop and implement system for drug distribution and drug administration in institutional settings (e.g., nursing homes, hospitals, etc.).
20. Participate in appropriate community educational perograms relating to health care and drugs (e.g., drug abuse, alcoholism, hypertension).
21. Organize and/or participate in "in-pharmacy" education programs for other pharmacists or health professionals.
22. Informally respond to drug information questions received from physicians, patients, etc.
23. Provide the services of a Florida consultant pharmacist to a hospital or nursing home.
24. Perform services under the Florida self-care pharmacist regulations.

State of Florida
Department of Education
Tallahassee, Florida
Betty Castor, Commissioner
Affirmative action/equal opportunity employer